

SIERRA LEONE.

Annual Report

ON THE

MEDICAL DEPARTMENT

FOR THE

YEAR ENDED 31ST DECEMBER, 1918.



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SIERRA LEONE.

ANNUAL MEDICAL REPORT FOR THE YEAR ENDED 31ST DECEMBER, 1918.

I.—ADMINISTRATIVE.

STAFF.

The Medical Staff consisted of :—

- The Principal Medical Officer.
- The Senior Sanitary Officer.
- The Provincial Medical Officer.
- Two Senior Medical Officers.
- One Sanitary Officer.
- Medical Officer of Health.
- 18 Medical Officers, and subsequently 15.
- 4 Native Medical Officers.

The following officers are still engaged outside the Colony :—

Drs. J. S. Pearson, W. A. Nicholson, E. J. Powell, P. A. Clearkin, J. M. Clarke, E. H. Mayhew, F. E. Whitehead, G. G. Butler, R. Semple, O'Hara May and H. E. Arbuckle.

Dr. T. F. G. Mayer acted as Provincial Medical Officer from 1st January to 8th February, 1918.

Dr. C. H. Allan acted as Provincial Medical Officer from 15th February to the end of the year.

Dr. E. W. Wood-Mason acted as Senior Medical Officer from 1st January to 15th July, 1918, and from 19th November to end of the year.

Dr. J. Y. Wood acted as Senior Medical Officer from 16th July to 18th November, 1918.

Temporary Assistance.—Dr. T. C. Maxwell, Medical Practitioner, was temporarily engaged during the year.

Dr. M. L. Jarrett, retired Medical Officer, was temporarily engaged from 30th August to 30th September, 1918.

Dr. G. N. Metzger, Medical Practitioner, was temporarily engaged from 14th September to 21st December.

OBITUARY.

Dr. R. Laurie, Senior Sanitary Officer, died in England on 27th December, 1918.

Dr. J. M. O'Connel, Medical Officer, died in East Africa on 7th November, 1918.

The European Nursing Sisters.—Miss I. Stevens, Nursing Sister, acted as Matron from 7th June to 5th November.

Miss M. M. Hall, Nursing Sister, Bathurst, Gambia, was temporarily attached to the Colonial Hospital owing to the abnormal increase in patients.

FINANCIAL.

REVENUE, MEDICAL DEPARTMENT, 1918.

					£	s.	d.
Hospital Receipts	...	...	...	...	849	4	0
Nursing Home Receipts	...	...	...	...	920	7	6
Sale of Medicines	...	...	...	...	352	7	8
Druggists' Fees	...	...	...	...	3	10	0
Maintenance of Lunatics	515	18	9
Total					£2,641	7	11

Total Expenditure	£31,509	13	6
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II.—PUBLIC HEALTH.

GENERAL REMARKS.

The influenza epidemic, which over two-thirds of the population contracted and which caused during September the deaths of over three per cent. of the native population, has been dealt with fully in a special report and will not be again considered here. It is, however, necessary to mention that the disorganisation of the sick reports and the other returns kept by the Medical Department during this period make the compilation of the Annual Report a matter of extreme difficulty.

Malaria.—The number of admissions to hospital and the total attendance at the different dispensaries show a considerable decrease compared with recent years. The total, 2,497, is 507 below those in the year 1917.

Out of 1,408 blood examinations in the Laboratory, the following results were obtained:—

Subtertian	...	...	...	...	...	...	415
Crescents	...	...	...	...	...	...	8
Tertian	...	...	...	...	...	...	6
Quartan	...	...	...	...	...	...	2
Total							<hr/> 431 <hr/>

Small-pox in a mild form occurred in various parts of the Colony and Protectorate, and owing to Chicken-pox being also prevalent some trouble was caused in dealing with the situation with a depleted staff. The new scheme of locally appointed Vaccinators has not been found to meet the requirements, and is one cause of the large diminution in the total number of 42,300 less, or, roughly, only two-thirds of the 1917 figure, but a further trial, after supervision by District Medical Officers, is necessary before making a radical change. The total number of Small-pox cases reported was only 314, but this figure does not include cases not definitely diagnosed as such by either Medical Officers or Dispensers.

No case of Enteric Fever, Cholera or Plague occurred, and only two cases of Beri-Beri. One case of Trypanosomiasis in a native seaman was definitely diagnosed in Freetown, but the locality in which he contracted the disease could not be discovered. A symptomatic case was reported by the Dispenser at Kennema, but was not confirmed. At the end of December an American white was admitted into the Nursing Home for Fever contracted at Mabang. This was accompanied by a rash on the chest, and after repeated blood examinations, Trypanosomes were found from January 20th onwards.

One case of Yellow Fever, which was afterwards confirmed at an Autopsy, occurred in Freetown in August. It is doubtful if there were any other cases even in the Protectorate where in the previous year there had been two undoubted cases in the Makene Sub-district, but the Sanitary Department took precautionary action in this same district as mentioned in paragraph 4 of the Report by the Acting Senior Sanitary Officer.

Although ships in harbour from South Africa had several cases of Cerebro-Spinal Fever, only one, a female, was landed. She died at the Nursing Home. No local cases were discovered during the year.

A considerable number of cases of Pulmonary Tuberculosis, particularly amongst Government Officials, was discovered during the first eight months of the year. There are no reasons for supposing that the disease is increasing to any alarming extent. A somewhat to be expected fact was proved during the last three months of the year when no fresh cases of early Phthisis were found in Freetown, *i.e.*, the influenza epidemic had caused the deaths of undiagnosed early cases that were unable to stand the double infection.

HILL STATION.

The total number of Europeans resident at Hill Station during the year was 58. They were divided as follows :—

Government Officials	...	...	...	...	...	...	42
Military	...	...	...	...	...	...	4
Missionaries	...	...	...	...	...	...	1
Non-Officials (including wives of Civil and Military Officials)	...	...	...	...	...	...	11

GENERAL HEALTH OF EUROPEAN OFFICIALS.

The total number of Officials resident in the Colony and Protectorate was 185.

The average number resident was 97.

There were six deaths during the year. The cause of death was Broncho-Pneumonia, Influenza and Cardiac failure.

Eleven Officials were invalided during the year.

The cause of invaliding in each case respectively was : Anæmia, Malaria, complicated by Cholecystitis, Amœbic Dysentery, Tropical Neurasthenia, Gastritis, Delusional Insanity, Amœbiasis, Anæmia and Debility, Jaundice and severe Hæmorrhoids.

GENERAL EUROPEAN HEALTH.

The European residents were as follows :—

Officials	...	...	...	...	...	...	...	185
Non-Officials	...	...	...	...	...	...	...	277
Military	...	...	...	...	...	...	...	574

There were six deaths during the year.

CLASSIFICATION OF DEATH RETURNS OF EUROPEANS.

Government Officials	3
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Naval and Military, including arrivals of transport, colliers, etc :—

EUROPEAN TROOPS (GARRISON).

Malaria	...	...	...	...	...	...	...	2
Pneumonia	...	...	...	...	...	...	...	1
Yellow Fever	...	...	...	...	...	...	...	1
Influenza	...	...	...	...	...	...	...	5
Mitral Stenosis	...	...	...	...	...	...	...	1

EUROPEAN TROOPS (EX-TRANSPORT).

Septicæmia	...	...	...	...	...	...	1
Small-pox	...	...	...	...	...	...	1
Influenza	...	...	...	...	...	...	44

NON-EUROPEAN TROOPS (GARRISON).

Septicæmia	...	...	...	...	...	...	1
Carcinoma of Liver...	...	...	...	...	...	...	1
Abscess Appendix	...	...	...	...	...	...	1
Pneumonia	...	...	...	...	...	...	2
Pyæmia	...	...	...	...	...	...	1
Influenza	...	...	...	...	...	...	22

NON-EUROPEAN TROOPS (EX-TRANSPORT).

Tubercle of Lungs	...	...	...	...	...	...	16
Valve Disease of Heart	...	...	...	...	...	...	4
Dysentery	...	...	...	...	...	...	4
Bronchitis, acute	...	...	...	...	...	...	2
Phthisis	...	...	...	...	...	...	1
Pneumonia	...	...	...	...	...	...	6
Pleurisy	...	...	...	...	...	...	3
Embolism from Hæmatoma of Leg	...	...	...	...	...	...	1
Guinea Worm Foot	...	...	...	...	...	...	1
Empyæma	...	...	...	...	...	...	1
Nephritis	...	...	...	...	...	...	2
Mitral Stenosis	...	...	...	...	...	...	1
Influenza	...	...	...	...	...	...	13
Hemiplegia	...	...	...	...	...	...	1

EUROPEAN OFFICIALS--1918.

TABLE SHOWING THE SICK, INVALIDING AND DEATH-RATES OF EUROPEAN OFFICIALS.

	1917.	1918.
Total number of Officials resident	210	227
Average number resident	110	97
Total number on sick list	197	158
Total number of days on sick list	1,673	1,528
Average daily number on sick list	4.58	4.18
Percentage of sick to average number resident	4.16	4.30
Average number of days on sick list to each patient	8.49	9.67
Average sick time to each resident	15.20	16.79
Total number invalided	9	11
Percentage of invalidings to total residents	4.28	4.84
Percentage of invalidings to average number resident	8.18	11.34
Total deaths	2	6
Percentage of deaths to total residents	0.95	2.64
Percentage of deaths to average number resident	1.81	6.18

During the Influenza period scarcely any Officer was placed on the Sick List.

NATIVE OFFICIALS—1918.

	1917.	1918.
Total number of Officials resident	650	650
Average number resident... ..	550	550
Total number on sick list... ..	1,042	866
Total number of days on sick list... ..	4,853	37,878
Average daily number on sick list	13·29	103·77
Percentage of sick to average number resident	2·41	18·86
Average number of days on sick list to each patient	4·65	43·62
Average sick time to each resident	8·82	68·86
Total number invalided	21	30
Percentage of invalidings to total residents	3·23	4
Percentage of invalidings to average number resident	3·81	5·45
Total deaths	1	51
Percentage of deaths to total residents	0·15	7·84
Percentage of deaths to average number resident	0·18	9·27

During the Influenza period scarcely any Officer was placed on the Sick List.

III.—HOSPITALS AND DISPENSARIES.

ANNUAL REPORT ON THE COLONIAL HOSPITAL, FREETOWN, 1918.

Dr. T. F. G. Mayer, Senior Medical Officer, acted as Provincial Medical Officer to 8th February, Dr. C. H. Allan, Senior Medical Officer, acting in the same capacity for the rest of the year.

Dr. E. W. Wood-Mason, Medical Officer, acted as Senior Medical Officer till 15th July, being relieved by Dr. J. Y. Wood till 18th November, when Dr. Wood-Mason resumed the duties till the end of the year.

The following Medical Officers were in charge of the Wards during the year:—

Drs. Wood-Mason, Wood, Deane and Wright.

Dr. W. A. Young was in charge of the Laboratory.

Dr. E. J. Wright, who sends in a separate report, was in charge of King Harman's Ward.

Dr. Maxwell was in charge of the Out-Patients' Department.

In-Patients.—The total number of patients treated in the wards during the year was 1,493; of these 1,159 were males and 334 females. There were 159 deaths.

Out-Patients.—The number treated in the out-patients' department was 8,332, the total number of attendances being 13,836.

(Sgd.) E. W. WOOD-MASON.

Acting Provincial Medical Officer.

LIST OF OPERATIONS PERFORMED UNDER ANÆSTHETIC.

The total number of operations performed during the year was 173. They are shewn in the following table :—

Operation.	Successful.	Died	Total.
Abscess	20	—	20
Abscess of liver	3	1	4
Amputations, various	14	—	14
Appendicitis	2	—	2
Aspiration of Joint	2	—	2
Carbuncle	1	—	1
Cellulitis	1	1	2
Circumcision	3	—	3
Compound Fracture	5	—	5
Curetting Uterus	17	—	17
Dilatation of Cervix Uteri	1	—	1
Dilatation of Stricture	1	—	1
Dislocation, Reduction of	2	—	2
Elephantiasis Scroti	6	—	6
Empyæma	2	—	2
Evacuation of Uterus	1	—	1
Examinations	1	—	1
External Urethrotomy	1	1	2
Extraction of Teeth	11	—	11
Extravasation of Urine	1	—	1
Fibroma, Excision of	4	—	4
Fistula in Ano	2	—	2
Foreign bodies excised	3	—	3
Fracture of Skull, Trephining for... ..	2	—	2
Fractures, "putting up" in Splints	3	—	3
Glands of Neck, Tubercular	1	—	1
Hæmorrhage, Secondary	—	1	1
Hæmorrhoids, External	1	—	1
" Internal	2	—	2
Hernia, Inguinal	12	—	12
" " Strangulated	—	4	4
" Umbilical	1	—	1
Hydrocele	1	—	1
Hysterectomy	—	2	2
Laparotomy... ..	3	4	7
Ligation of Artery	4	—	4
Lipoma, Removal of	1	—	1
Mammary Abscess	2	—	2
Nasal Polypi	1	—	1
Ovariectomy	1	—	1
Paraphimosis	1	—	1
Septic Hand	1	—	1
Sequestrotomy	4	—	4
Sinus incised and scraped	1	—	1
Suprapubic Cystotomy	2	2	4
Tendon Suturing	1	—	1
Ulcers scraped	2	—	2
Wounds, incised, sutured	3	—	3
TOTAL	157	16	173

The number of operations performed in 1918 is small compared with the number done in 1917. This is due to the necessity of conserving the small supply of surgical dressings obtainable owing to war conditions. In consequence, operative work was confined to those operations which were absolutely necessary. No operations could be done during the influenza epidemic.

The deaths, of which there were 9·2 per cent., occurred in persons brought to Hospital at the "eleventh hour" and in desperate case, operation giving the only possible chance of recovery.

ANNUAL REPORT OF NURSING HOME, 1918.

Senior Sister K. G. Appleton was in charge of the Home during the year.

Sister C. Littlewood returned from vacation leave in June.

Sister E. M. Robinson was transferred to the Gold Coast on 21st September.

There were six patients remaining at the end of 1917, and 288 were admitted during the year. This latter number represents an increase of 150 over the previous year, and is more than 200 in excess of pre-war figures. The number of war vessels in the harbour and the influenza epidemic are responsible for these greater numbers.

The deaths were 25 and mostly took place a few hours after admission from Influenza and Pneumonia. Most of those dying came from ships in harbour.

An exact record of the invalidings is not obtainable, but they include several cases of Phthisis from H.M.S. "Africa."

The following table shows the diseases for which patients were admitted to the Nursing Home :—

Cerebro-Spinal Meningitis	...	...	...	...	1
Dysentery, Amœbic	...	...	...	...	8
Influenza	...	...	...	...	99
Malaria	...	...	...	...	66
Syphilis	...	...	...	...	13
Tuberculosis	...	...	...	...	8
Trypanosomiasis	...	...	...	...	1
Alcoholism	...	...	...	...	2
Amœbic Cystitis	...	...	...	...	4
Amœbic Hepatitis	...	...	...	...	4
Liver Abscess	...	...	...	...	1
Cholecystitis	...	...	...	...	2
Gastritis	...	...	...	...	4
Appendicitis	...	...	...	...	6
Sunstroke	...	...	...	...	2
Anæmia	...	...	...	...	5
Diseases of Nervous System	...	...	...	...	7
" Respiratory System	...	...	...	...	13
" Circulatory System	...	...	...	...	2
" Urinary	...	...	...	...	1
Other diseases	...	...	...	...	39
Total					288

C. H. ALLAN,
Acting Principal Medical Officer.

ANNUAL REPORT OF THE COLONIAL HOSPITAL LABORATORY FOR THE YEAR ENDING 31st DECEMBER, 1918.

The Medical Officer in charge throughout the year was Dr. W. A. Young. Mr. Jonathan Roberts acted as Laboratory Assistant.

Routine examination of blood films taken from the In-patients of the Colonial Hospital and Nursing Home

Type.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Totals.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Subtertian ...	10S + 2	29	7S + 1	38	61S + 6	48	20S + 3	57	98S + 12	172
Tertian ...	—	—	—	—	—	—	—	3	—	3
Quartan ...	—	—	—	—	—	—	—	2	—	2
Crescents ...	3S	—	—	1	2S	—	—	—	5S	1.
Polymorphleucocy- tonis ...	4	16	7	17	8	18	3	9	22	60
Eosinophilia ...	3	6	2	9	1	4	—	4	6	23
Trypanosomes ...	—	—	—	—	—	—	—	1	—	1
Negative ...	10Q + 15	96	8Q + 14	133	31Q + 5	88	27Q + 12	95	76Q + 46	412
Re-examination ...	13	1	8	4	15	8	27	21	63	34
Totals ...	208		249		295		284		1,036	

It will be noticed that 265 in-patient European blood specimens have been examined this year. This large number is due to Freetown having been a naval base and consequently the number of seafaring men in the harbour markedly increased.

In the above figures "S" after a number means that the patient has come from a steamer.

Of the total 115 cases of definite malarial infection in Europeans, no less than 103 or 89·5 per cent. were imported cases.

This is very important as at one period it was suggested that Sierra Leone accounted for many of the malarial cases arriving in England. The above figures distinctly discredit such a view.

Under "Negative" the letter "Q" after a number means that the patient had taken quinine before coming to hospital and again refers to seamen.

All these cases showed the typical signs of recent malaria, *i.e.*, anæmia—crenated red cells—pigmented and increased number of large mononuclear cells—bluish coloration of certain erythrocytes—even though no malarial parasites could be found.

They should, therefore, be regarded as malarial cases, which would bring the total number up to 179.

One feature in these blood examinations is worthy of comment. Since abundant quinine was freely distributed on ships and elsewhere many of the blood films showed no parasites. Apart from the ordinary signs of malaria these films always showed a certain number of red cells, usually fractured on one side, of a pale bluish colour with whitish centre.

Obviously parasites had been harboured in these cells. The colouring was not due to the quinine since cinchonised normal blood did not show these cells. Such cases when left without further quinine treatment, invariably developed another malarial attack. Hence when time did not permit of a long detailed examination and these cells were found, they were looked upon as pathognomonic of malaria and the case was diagnosed "probably malaria."

One film of native blood showed a very fine specimen of *plasmodium tenue*.

Only one case of human trypanosomiasis was found this year. The patient was a seaman, and the place of infection was not known. The Trypanosome conformed to the Gambiense type.

One case of malignant Tertian malaria with crescents was interesting because of the treatment.

The Subtertian parasites quickly disappeared with quinine treatment, but even with large doses the crescents still survived. The patient was having 45-60 grains of quinine a day, and on six successive days crescents were abundantly found. He was now given Galyl 0.3 gram, while the quinine was still continued but reduced to 30 grains a day.

Four days afterwards only one crescent could be found in the film, and only after prolonged search.

On the fifth day the result was the same. Another dose of Galyl was now given and blood films became negative. A third dose was given to make sure of a cure. The quinine was continued all the time. No more crescents were found, and the patient left hospital quite fit.

A special case of a similar nature was reported to the Colonial Office by Drs. Murphy, Wood and myself in 1917.

That patient has only had fever once since and on no occasion has crescents been found again.

It would seem as though the Galyl injured the crescent in some way and made it vulnerable to quinine. Galyl by itself does not appear to be efficacious.

One other interesting blood case may be referred to. This was a West Indian fitter, who complained of being run down. Dr. C. H. Allan, Senior Medical Officer, found he had enlarged glands everywhere, so sent him to hospital. A blood film showed no parasites but a marked leucocytosis.

Actual counts were :—

Reds, 4,200,000.	Hæmoglobin percentage, 65.
Colour Index less than 1.	
Total white cells = 17,500.	
Differential count = Polymorph	= 49
Large Lymphocytes	= 10
Small „	= 31
Mononuclear	= 2
Transitional	= 4
Eosinophiles	= 4

There was no suggestion nor history of Syphilis. He was treated with Arsenic and good diet, and after a few days went back to work at his own request. This was in March. In May he had a severe infection of Subtertian malaria. The white count then was practically normal and the glands had diminished considerably.

When seen in December all the glands had practically disappeared except the epitrochlears and he felt fit though tired on occasions.

From the above facts one cannot say the diagnosis is a Lymphatic Leukaemia of any kind—neither is it a case of Hodgkins disease, but he will be kept under observation from time to time.

OUT-PATIENT BLOOD STATISTICS.

TYPE.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Totals.	
	Euro-peans.	Natives.	Euro-peans.	Natives.	Euro-peans.	Natives.	Euro-peans.	Natives.	Euro-peans.	Natives.
Subtertian	2	10	5	23	4	40	8	41	19	114
Tertian	1	—	—	—	—	1	—	1	1	2
Quartan... ..	—	—	—	—	—	—	—	—	—	—
Crescents	1	—	—	—	—	1	—	—	1	1
Polymorphonuclear leucocytosis	—	—	1	5	—	13	3	2	4	20
Eosinophilia	—	—	1	10	—	6	—	4	1	20
Trypanosomes	—	—	—	—	—	—	—	—	—	—
Negative	—	17	3	39	3	81	6	36	12	173
Re-examination	2	—	—	—	1	1	—	—	3	1
TOTALS	33		87		151		101		372	

In Out-patients bloods have only been examined when required except in the case of Government officials, when all fevers were investigated.

In the 3rd Quarter under “Native Negative” 53 of these 81 cases were blood films of Influenza cases at the beginning of the epidemic.

During the early stages of the Influenza epidemic there was nothing distinctive in the blood films. When lung complications set in, there was a distinct leucocytosis to begin with. Should the case become unfavourable a leucopenia was observed. In fact a very definite prognosis could be made by white cell counts. Slight anæmia was noticed in the early stages of convalescence

The rains continued late this year consequently more malarial cases occurred in the 4th Quarter than is usual.

URINES.

IN-PATIENTS.

Negative	204
Slight trace of Albumen	122
Cloud of Albumen	175
Albumen + casts	7
Albumen + pus	7
Total	<u>515</u>

Of the 204 negative cases 62 were Europeans.

Total Europeans examined equal to 133. Of the Natives 63 per cent. suffer from some degree of albuminuria. It is very striking the frequency

of albuminuria in the grown up native. As he grows older he is becoming more immune to malaria, so that should not account for the condition. The probability is that Posterior Urethritis accounts for most of these cases.

OUT-PATIENTS.

	Europeans.	Others.	Government Candidates.	Totals.
Negative	15	42	191	248
Trace of Albumen	3	50	21	74
Cloud	3	30	15 (Gonorrhoeal)	48
Casts	2	2	—	4
Pus	2	6	—	8
Amœba	3	—	—	3
Sugar	—	1	—	1
Bacilluria	1	—	—	1
GRAND TOTAL				587

Government candidates are usually boys from 16-20 years of age. With few exceptions their albuminuria is due to recent Gonorrhœa, *i.e.*, 19 per cent.

Three cases of Amœbic Cystitis occurred in men. The Amœba was of the *E. histolytica* type.

Two of the cases were chronic, having a history of two years' duration. Interest lies in the fact that all three patients had Gonorrhœa first. It is probable therefore that the Amœbic infection took place at the same time as the Gonorrhœa. If this was so, then the incubation in two of the patients was, 40 days and 72 days.

A few specimens of *Prowazekia urinaria* were found in the urine of a pregnant woman, who had marked œdema of the legs. No casts were seen and the urine was alkaline. The organism measured from 8-12 μ long and 5-6 μ wide.



The protoplasm was granular and the nucleus showed up well in a fresh specimen.

Dr. E. J. Wright also had a private case which he described in the "Journal of Tropical Medicine" of 1918, page 119. This occurred in a European lady, who had Blackwater fever.

EXAMINATION OF FÆCAL SPECIMENS.

FÆCES—INPATIENTS.

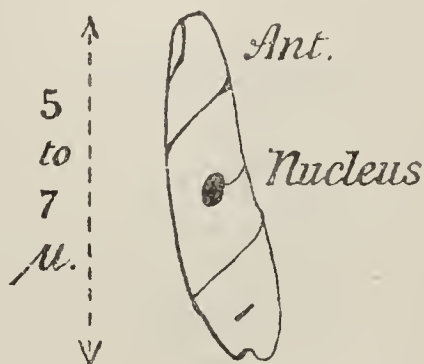
						European.	Natives.	Freetown Prison.
<i>E. histolytica</i>	...	...	...	...	...	38	124	127
<i>E. histolytica</i> Cysts	...	...	...	...	...	17	28	46
<i>E. coli</i>	...	...	...	...	...	1	—	2
<i>E. coli</i> Cysts	...	...	...	...	...	1	1	6
<i>Cercomonas</i>	...	...	...	...	...	3	9	11
<i>Trichomonas</i>	...	...	...	...	...	1	2	5
<i>Chilomastix Mesnili</i>	...	...	...	...	...	9	38	41
<i>Balantidium Coli</i>	...	...	...	...	...	1	1	2
<i>Balantidium Minutum</i>	...	...	...	...	...	—	—	1
<i>Ankylostoma</i>	...	...	...	...	...	—	47	176
<i>Ascaris</i>	...	...	...	...	...	1	100	243
<i>Trichiuris Trichiura</i>	...	...	...	...	...	2	22	38
<i>Strongyloides larva</i>	...	...	...	...	...	—	14	40
<i>Spirochaeta Eurgyrata</i>	...	...	...	...	...	1	1	4
<i>T. Saginata</i>	...	...	...	...	...	—	5	19
<i>Tania Solium</i>	...	...	...	...	...	—	1	—
<i>Blastocystis</i>	...	...	...	...	...	12	15	34
<i>Lambliia</i>	...	...	...	...	...	—	1	1 and Nyetotherus
Negative	...	...	...	...	...	130	134	245
Cases	...	...	...	...	...	240	500	1,010
Total cases						...	1,750.	

The *E. histolytica* infection percentage works out for all about 21 per cent. The Prison, acting as a kind of clearing house, gives a percentage of 17 per cent. It would be erring on the conservative side to state that 10 per cent. of the community suffer from Amœbiasis.

Among the 245 Prison negatives 38 are Chinamen. The other six suffered from *T. trichiura* and *Ankylostome* in the ratio of 1 to 2.

It is quite impossible to give the varieties of combination of fæcal parasites but one patient actually had the following in one fæcal slide, *i.e.*, *E. histolytica* *Chilomastix mesnili*—*Cercomonas*—*Ankylostome*—*Ascaris* and *Strongyloides larva*. He also had Subtertian malaria.

In one Chinaman's fæces a curious organism was found.



In the fresh specimen it appeared as shown. The length was 5μ — 7μ and breadth $1\frac{1}{2}\mu$ — 2μ . There was a distinct nucleus. It was encircled by a band, but whether this was an actual crista + flagellum or not it is difficult to state. The parasite was very active, the pointed end being always anterior. Unfortunately stained specimens could not be got and more fæcal material could not be had, as the Chinamen seemed to change their names daily.

Probably, on more detailed inspection another flagellum might have been seen and it would thus be classed in the *Bodonidæ*.

SPUTUM.

	IN-PATIENTS.		OUT-PATIENTS.		TOTALS.	
	European.	Native.	European.	Native.	European.	Native.
Tubercle Bacilli ...	5	12	1	20	6	32
Blastomycosis ...	1	—	—	1	1	1
Pneumococci ...	1	9	—	1	1	10
Influenzal Organism ...	3	1	2	6	5	7
Negative... ..	27	62	3	35	30	97

TOTAL CASES EXAMINED—190.

It will be noticed that the community is infected with Tubercle to a fair extent. For Freetown it works out roughly at 1 in every 1,000, and this must be a conservative rate.

WASSERMAN REACTIONS.

Owing to lack of guinea pigs and the uncertainty of boats from home with amboceptor, the full technique was not attempted. Flemming's modification as described in the "Lancet" of May 29, 1909, was used and found very reliable and suitable.

Positives	= 72
Showing Partial Hæmolysis ...	= 7
Negative	= 49
<hr/>	
Total	= 128
<hr/>	

As far as could be ascertained Malaria did not influence the reaction. (See Prison report.)

Examination of Pus and other material :—

Liver abscess	E. histolytica	2
Vaginal pus	Gonococcus	5
	Gonococcus + Spirochaeta vaginalis	1
Penile pus	Gonococcus	12
Wounds	Staphylococcus	5
	Gram + diplococcus	1
	Tetanus + Spore	1
Neck Ulcer	Tubercle Bacillus	1
Pleural Exudate	" "	1
Bladder Exudate	E. histolytica cysts	4
Teeth Pyorrhœa	Staphylococci	2
	" + Spirochætes	1
Nasal secretion	Lepra Bacilli	1
Eye pus	Koch-Weeks bacillus	1
	Staphylococcus	1
Negatives ... ..	...	23
<hr/>		
Total		62
<hr/>		

SECTION—CUTTING.

1. A very enlarged uterus was removed by Dr. E. W. Wood-Mason and Dr. E. J. Wright. It measured, roughly, eight inches long by six broad by four deep. When cut open the uterine wall was seen to have become changed into a very hard fibrous, reddish condition with abundant vessels.

Apparently there was no malignancy, there being no deposits elsewhere and no glandular enlargement. Microscopically the condition appeared to be an Angio-fibro-myoma.

2. A child, aged 3 years, had an enlarged and protruding eyeball. Sight was evidently gone. It was undoubtedly painful. Dr. J. Y. Wood did an enucleation, but it was found that the bony orbit had already become involved. On section the condition was that of a Glio-sarcoma or Neuroblastoma.

3. Sections were made of a probable tubercular pneumonic lung. Tubercle Bacilli were easily demonstrated.

4. A piece of liver tissue was examined with a view to malignant disease, but only a gumma infiltrating the liver tissue was seen.

5. Sections of a kidney and liver showed all the typical changes of Yellow Fever and confirmed the diagnosis.

6. This case was of great interest. The patient, a policeman, aged about 55 years. He complained of a Papillomatous growth on his lip. No definitely enlarged glands were felt. His Wassermann Re-action was negative. A possible irritating tooth was removed, but the condition did not improve. A piece was removed for section, and it was found to be a typical Epithelioma of the lip. Cancer is apparently rare here or seldom met with. As far as I know this is the first definite Epithelioma of the lip reported from here. Some years ago the late Dr. Renner demonstrated the existence of Carcinoma of the Cervix uteri.

NOTES ON THE BACTERIOLOGY OF THE INFLUENZA EPIDEMIC.

Pfeiffer's bacillus was not found at all, nor was it cultivated. From the more recent literature on the subject it is evident that a very special preparation of the medium is required, and this may account for the negative results. The culture medium used was Nasgar or Agar smeared with human blood taken with aseptic precautions. In all smears from sputum, nasal secretion, throat swabs and post-mortem lung material the same organism was found, and when inoculated on the media this organism grew luxuriously. It was a gram +^{ve} diplococcus, not more than 1 μ in size. *M. catarrhalis* sometimes grew.

This diplococcus stained well with the aniline dyes. The growth was profuse. The colonies were small, varying from a pin's point to a pin's head in size, discrete and transparent, except the larger colonies, which became opaque in the centre.

This organism was also found in the pus of Parotitis and Otitis media. Attempts to grow it from the blood of patients were unsuccessful. Unfortunately, no guinea pigs were to hand.

It died out naturally on the medium after 10 days. If this organism was not the actual cause of the Influenza (expert opinion seems in favour of Pfeiffer's bacillus) it was certainly the cause of the complications. In numerous cases it was found in the sputum two to three weeks after convalescence began.

Water Analysis.—Fourteen different samples of Water from Freetown, Bonthe and the Protectorate have been analysed, both chemically and bacteriologically.

One well at 1, Soldier Street, Freetown, was found to harbour *B. coli*. It was 10 feet deep, had 18 inches of water, and was 20 feet from a cesspit.

Chemically the result was :—

Saline Ammonia	...	...	0.008 parts per 100,000.
Albuminoid	...	...	Alluminoid
Chlorides	...	...	1.7 " " "
Nitrites	...	...	Nil.
Nitrates	...	...	Trace.
O ₂ absorbed in $\frac{1}{4}$ hour at room temperature	...	...	0.1775 parts per 100,000.

The *Freetown supply* has been excellent in quality.

Its last chemical analysis reads :—

Saline Ammonia	...	...	0.00375 parts per 100,000.
Albuminoid	...	...	0.007 " " "
Chlorides	...	...	0.8 " " "
Nitrates and Nitrites	...	...	Nil.
Oxygen absorbed in shows at 37°C	...	...	0.05 " " "

Bacteriologically no organism of the Colon-Typhoid group was found.

Two organisms were found, however—gram negative, one producing spores and non-motile, which fermented lactose media. They did not produce Indol nor react on Neutral Red.

These lactose fermenters are to be found in many waters. One must therefore not be too hasty and condemn a water because it produces gas in a lactose medium. (See "Journal of Tropical Medicine & Hygiene" for October 15th, 1918—"Lactose Fermenters in Sierra Leone Waters" by the writer.)

Post-mortems.—There have been 72 autopsies performed, 13 being on prisoners and commented on in the Prison Report.

1. Amoebic Abscess—Rupture—General Peritonitis	...	...	3
2. Chronic Amoebic Dysentery	...	...	4
3. Influenza—Broncho - Pneumonia	...	...	8
4. " —Cardiac Failure (while swimming; he was not drowned)	...	...	1
5. Influenza—Peritonitis	...	...	1
6. Gonorrhœal Septicæmia	...	...	1
7. Yellow Fever	...	...	1
8. Cerebral Malaria (brought to Hospital moribund)	...	...	1
9. Lobar Pneumonia (3 with pericarditis)	...	...	7
10. Tubercular Pneumonia and Pleurisy	...	...	1
11. Septic Pneumonia	...	...	1
12. Tubercular Peritonitis	...	...	1

Carried forward ... 30

	Brought forward ...	30
13. Tuberculosis of both lungs—of gland causing ulceration \ into Aorta—Hæmorrhage.	... ..	1
14. Tuberculosis Lungs ... ..	... ..	1
15. Syphilis—Tertiary ... ..	... ..	1
16. „ Aortic Valve Disease ... ..	... ..	1
17. „ „ Aneurism ... ..	... ..	2
18. „ Aortic Ulceration—Hæmorrhage ... ..	... ..	1
19. Cirrhosis Liver—Cardiac Failure ... ..	... ..	1
20. Wounds—Severing of Subclavian Artery Veins ... ..	... ..	1
21. „ „ of Carotid Artery ... ..	... ..	1
22. Dislocation of Neck ... ..	... ..	1
23. Granular Kidney ... ..	... ..	2
24. Parenchymatous Nephritis ... ..	... ..	1
25. Carbolic Acid Poisoning (accidental) ... ..	... ..	1
26. Meningitis—Fracture Orbital Plate allowing admission of Pneumococci ... ..	... ..	1
27. Shock due to Burns ... ..	... ..	1
28. Myocarditis—Fatty Degeneration, valve incompetence ... ..	... ..	4
29. Drowning ... ..	... ..	2
30. Cerebral Hæmorrhage ... ..	... ..	1
31. Peritonitis due to Rupture Broad Ligament Abscess ... ..	... ..	1
32. Volvulus ... ..	... ..	1
33. Intussusception ... ..	... ..	1
34. Fracture and Dislocation of Occipital Condyles ... ..	... ..	1
35. Hypostatic Pneumonia due to Cardiac Failure ... ..	... ..	1
	Total ...	59

Comments.

No. 5.—Only organism found in the peritoneal fluid was the Gram+^{ve} diplococcus found in the Influenza cases.

No. 33.—There was severe Amœbic Cystitis present, also a curiously punched out ulcer of the small intestine. Typhoid organisms were not found. There was no recent Dysentery of large gut. Presumably the severe straining caused by the Amœbic Cystitis brought on the Intussusception of the small intestine.

Rats.—These were examined from time to time throughout the year and in no case was there any suspicion of plague.

The fleas were counted during the dry and wet seasons and it was found that there was no difference in the numbers. The largest number caught off one rat was 36.

Xenopsylla cheopis is the common variety of flea.

In the fæces of one rat were found *Lamblia* and the eggs of *Hymenolepis diminuta*.

Miscellaneous : —

1. A European lady suffering from meningitis had a specimen of her cerebro-spinal fluid cultured and a pure growth of the *Meningococcus intracellularis* obtained. It gave the necessary sugar reaction.

2. At one post-mortem examination typhoid-like ulcers were found in the small intestine. Cultures were made but no typhoid organism grown. The actual cause of death was Intussusception.

3. *Microfilaria bancrofti* was found in a case of Lympho-hæmato-Chyluria.

4. Two patients treated for Ankylostomiasis at the Prison produced respectively 349 and 269 worms. They were of the *Necator Americanus* type.

5. A dog suffering from Trypanosomiasis was found to be infected with *Trypanosoma congolense*.

6. An uncommon *Anopheles* mosquito was caught at Hill Station. It appears to be *A. smithii*. The Medical Officer of Health has forwarded it for identification.

7. A prisoner had symptoms of Tuberculosis of the lungs. No tubercle bacilli were found. The right lung became more and more solid at the base and a cavity was spotted in the upper lobe. There was no suggestion of ordinary pneumonia. Post-mortem the right lung was inflamed and fibrosed in parts, with here and there a small cavity. Encysted and attached to the small intestine was a *Porocephalus armillatus*. Possibly this was the cause of the pneumonic condition of the lung. No others were found.

8. Found encysted in the liver the following two parasites. They measured 14 millimètres by 2·5 min., had 23 rings, were cream-coloured and possessed four golden rooklets each. These would appear to be *Porocephalus constrictus*.

If *P. constrictus* is regarded, as some suggest, as the nymph of *Pentastoma moniliformis*, then this is of interest, as it has only been reported twice previously as occurring in man. (*Vide* Animal Parasites of Man, by Fantham Stephen and Theobald).

9. Five Staphylococcal vaccines were made and cured the condition treated.

10. Erythrocytic and leucocytic counts were made when required.

I have the honour to be, Sir,

Your obedient Servant,

W. A. YOUNG,

Medical Officer (in charge of Laboratory).

January, 1919.

ANNUAL REPORT ON THE HEALTH OF THE FREETOWN PRISON FOR THE YEAR ENDING DECEMBER 31st, 1918.

Medical Officer in charge throughout the year—Dr. W. A. Young.

Chief Dresser and Dispenser—Mr. Nylander.

Health of European Officers was good.

Health of Native Officials.—108 Officials were treated. Of these, 18 were sent to the Colonial Hospital, of whom 4 suffered from Amoebic Dysentery. Two were isolated for Chicken-pox. One Official was invalided out of the Service.

Of a total Staff of 54, 51 fell victims to Influenza, 2 dying from lung complications.

The health level of the Prisoners was as usual very low. Admissions to hospital were mainly for Dysentery (131 new comers, 68 recurrent cases—8 deaths), Ankylostomiasis, and Cardiac affections.

At the outbreak of the Influenza Epidemic there was a daily average of 200 prisoners. All except 34 (they only had it slightly) contracted the disease in a severe form, suffering from various degrees of Broncho-Pneumonia or

Cardiac failure. There were 8 deaths (3 cardiac, 5 broncho-pneumonia. The cardiac failure occurred after the temperature had become normal and recovery was beginning). This gives a death percentage of 2·7 per cent. The town's death rate was considerably above this, *i.e.*, 4 per cent., and these figures show that where cases were caught early and treatment and good feeding could be had, the patients did much better than the ordinary native who was left to his own devices in his hut, as happened in many cases in the town.

Sent to Kissy Lunatic Asylum :—Males 11 (5 on emergency certificates)
Females 1

12

Released on Medical grounds, 2.

One suffered from Optic Atrophy and was practically blind.

One had served a long sentence and became hemiplegic.

68 Prisoners had special treatment with organic arsenical Compounds. *i.e.*, Salvarsan or Galyl, nearly 200 doses being distributed among them.

Operations under general Anæsthetic :—

Radical cure for double Hydrocele	...	...	...	2
„ „ „ Inguinal hernia	...	...	...	1
Cellulitis of finger	...	...	...	1
Dental caries	...	...	...	1
Phimosis	...	...	...	5
				<hr/> 10

Minor Operations :—

Dental extractions	...	...	...	...	23
Tapping hydroceles	...	...	...	...	5
					<hr/> 28

Post-mortem Examinations 13

*Improvements :—*Twenty-five square yards of concrete was laid between Block A and the Tailor's Room. On this the latrine pans are washed and disinfected, the smooth surface allowing of easy flushing into the concrete drains on either side.

Detailed Statistics.

In hospital on December 31st, 1917	...	...	...	...	17
Admissions during 1918	...	...	...	...	467
Total	...	...	...	...	<hr/>484
Of these were discharged cured	...	...	...	...	273
Relieved	...	...	...	...	169
Died	...	...	...	...	23
In hospital at end of 1918	...	...	...	...	19
Taken under observation and treatment	...	...	...	...	560

Causes of Death :—

Chronic Amœbic Dysentery	...	...	...	...	6
Acute Gangrenous Amœbic Dysentery	...	...	...	...	1
Status Epilepticus	...	...	...	...	1
Influenza (3 cardiac failure, 5 Broncho-pneumonia)	...	...	...	...	8
Fatty heart—Myocarditis, probably Syphilitic	...	...	...	...	1
Asthenia due to Ankylostomiasis—Tuberculosis, chronic	...	...	...	...	1
Amœbic Dysentery and Syphilis	...	...	...	...	1
Bronchiectasis due to Mediastinal gumma	...	...	...	...	1
Pneumonia—due to Porocephalus	...	...	...	...	1
Cerebral hæmorrhage	...	...	...	...	1
Valvular Incompetence—Myocarditis	...	...	...	...	1
Pulmonary Tuberculosis (Hæmophysis)	...	...	...	...	1
					—
					23
					—

Out-Patients :—

New cases—1,616. Subsequent attendances—1,859.

Daily average number of Prisoners :—

Males	...	...	275
Females	...	...	4
			—
			279
			—

Vaccinations performed	...	...	...	...	...	94
„ Sucessful	...	...	...	...	...	82

Average weight of Prisoners ... 128 lbs.

Weights varied from 74 lbs. (5 stones 4 lbs.) to 220 lbs.

Number of new comers examined	...	...	{ 856 males.
			{ 23 females.
			—
			879
			—

Examined as to fitness for solitary confinement	...	...	223
Examined as to fitness for corporal punishment and found			
unfit	...	...	6
Executions	...	...	5

In prison on December 31st, 1917, 272 males, 6 females.

Total prisoners for the year, 1,128 males, 29 females=1,157.

List of Infections from which certain new comers suffered :—

Amœbic Dysentery (including Cyst carriers)	...	...	...	84
„ „ + Flagellates	..	...	...	17
„ „ + Helminthiasis	...	...	...	12
„ „ + Gonorrhœa	...	...	...	8
„ „ + Mitral incompetence	...	...	...	6
„ „ + „ „ + Yaws	...	...	...	1
„ „ + Inguinal hernia 1 + albuminuria 1	...	...	...	2
„ „ + Mitral incompetence + Gonorrhœa +				
Asthma + Facial Paralysis	...	...	...	1
				—
				131
				—

Cardiac :—

Mitral	incompetence	(Myocarditic)	...	...	...	27
"	"	+ Helminthiasis	...	...	...	13
"	"	+ Alcoholism	...	...	...	2
"	"	+ Syphilis	...	...	...	4
"	"	+ Aortic valve disease	...	...	...	2
"	"	+ Stenosis	...	...	...	2
						—
						50
						—

Helminthiasis	171
---------------	-----	-----	-----	-----	-----	-----	-----

Hernias :—

Umbilical	...	...	...	...	...	...	1
Inguinal	...	...	...	...	...	...	20
"	+ hydrocele	...	...	...	...	...	9
Double Inguinal	...	...	...	...	...	...	6
							—
							36
							—

Acute Gonorrhœa	...	...	...	...	...	...	95
"	"	+ Syphilis	...	...	...	...	2
							—
							97
							—

Hydroceles	...	...	...	...	...	...	25
Active Syphilis (<i>i.e.</i> , primary, secondary, 1 typical congenital case)	...	...	...	...	...	...	13
Leprosy	...	...	...	...	...	...	3

Miscellaneous :—

Ulcers of Leg—Skin Diseases Elephantiasis—Insane—Strabismus—Wounds Albuminuria—Bright's Disease—Influenza	29
---	----

Total 555, or 63 per cent.

Note.—No case appears under two headings, though as a rule each case suffered from more than one infection, but each has been catalogued under the predominating infection, since space forbids (with some exceptions) a detailed account of the variety of combinations obtained.

COMMENTS ON THE MORTALITY.

Had the Influenza Epidemic not come along the excellent record of only 15 deaths would have been achieved.

The Dysentery cases at the post mortem examination showed the typical signs of many previous attacks, their intestines becoming mere tubes, devoid of mucous membrane on large areas, their deaths being really due to physiological starvation. The acute Gangrenous case died within 48 hours of the onset. The whole length of the large intestine was one inflamed, thickened and ulcerating mass, and the liver was markedly fatty.

It was found this year that, while treating with Emetin or Ipecacuanha, it was very wise to give Magnesium Sulphate in $\bar{3}$ ij doses every 2-4 hours during the day for the first two days and then $\bar{3}$ /s every morning for the next three or four days. This kept the bowel free of deleterious material and swept out any free Amœbæ or cysts, thus preventing to a great extent the toxæmia which causes the fatty change in the liver.

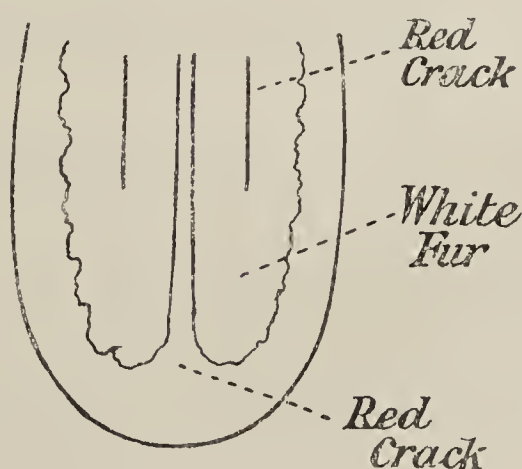
When this latter stage is reached, recovery rarely ensues. Only one of the prison cases got to this stage (and it must have been early) and recovered. He was very jaundiced and had all the symptoms of an acute toxæmia. He was literally fed on Mag Sulph, with gratifying results, and completely recovered. Unfortunately he died six months later from Influenza.

The same preventive and defensive policy has been carried out as described in the Annual Reports of 1916 and 1917, *i.e.*, examination of all new-comers' fæces—isolation of infected cases—sterilisation of all food and water, etc. A further precaution was taken in that all cases known to have had Dysentery previously were given another course of treatment every three months, the idea being to make sure of cures and prevent possible relapses. It proved worth the extra trouble.

In the Tropical Diseases Bulletin, No. 5, Vol. 11, May 15th, 1918, it was asked if, after having made all these elaborate defences against Dysentery, the linen and clothes were sterilised. The answer is in the affirmative. Each prisoner is given a clean suit on entering prison which has previously been boiled or soaked in crude carbolic or Izal. While in hospital prisoners wear special hospital clothes. The linen is dealt with in the same way.

Apart from the ordinary reasons why Dysentery should increase at the beginning of the rains, I can't help thinking that the increased humidity causing less perspiration from the body (also there is less exercise taken); consequently more fluid in the body and so less absorbed from the bowels, permits of a better chance for Enteritis setting in and thus giving an opportunity for any stray amoeba in the bowel to enter the damaged mucous membrane. The Dysenteric patient has rather a typical tongue. So much so, that when able to recognise it, one can often pick out probable cases of Amœbiasis on inspection in the Out-Patients.

The tongue is beefy, with very red edges. The dorsum is covered with a thick white fur except in the mid line, where there is a red crack which joins the red edge, which in turn indents the white fur. Parallel and on each side of the middle crack is usually another smaller red crack.



Cardiac Affections.—In the returns it will be seen that Mitral Incompetence is quite common, in fact has a percentage of six per cent. for all new-comers. It can be stated definitely, I think, that Acute Rheumatic Fever as seen in Britain does not occur here. What then is the cause of this Incompetence? Out here Mitral Incompetence is usually a symptom of Dilatation. This dilatation may be due merely to severe exertion, but usually is due to Myocarditis and augmented by any exertion. The valves are intact, but the valve ring is very much stretched, due to muscle weakening. Where Endocarditis of the valves does occur, the Pneumococcus or Gonococcus is found to be the trouble, but such cases are not common.

The causes of the Myocarditis are probably numerous, but two may be stated definitely, *i.e.*, Ankylostomiasis and Syphilis.

The curing of these two conditions often cures the Incompetence. Undoubtedly carrying heavy weights on the head causes dilatation, but if not diseased compensating hypertrophy takes place. But often the heart is diseased, and then no hypertrophy follows.

For the above cases Digitalis is of little value unless for steadying the rhythm. Undoubtedly a series of electro cardiograms and other heart tracings of some of these carriers' hearts would make an interesting study.

In 155 post mortem examinations made during five years in Sierra Leone I have never seen endocarditis of the mitral valve, that was not gonococcal or pneumococcal, and these cases are infrequent, *e.g.*, out of 67 post mortems this year there were only one of each.

Rheumatism (so-called).—On looking at any of the older yearly returns (especially the Out-patients record) it will strike even the most casual observer the high figure which "rheumatism" cases reach. The condition was diagnosed "rheumatism" (a much misused term) because of chronic pains in muscles or joints or both.

In 1913-14, when first taking charge of the prison, this feature was very apparent, and one felt inclined to regard the condition as an attempt at malingering. Towards the end of year 1917, when again in charge, I was convinced the prisoner was suffering from some genuine complaint and determined to go into the matter more thoroughly after returning from leave.

At the beginning of 1918 these "rheumatism" cases were plentiful. On December 31st, 1918, it would have been difficult to discover a genuine case, for they had been banished.

The typical patient would come to Out-patients and say "Please sah, I get pain for my waist and I no feel well," and would graphically describe it by placing both hands on the small of his back and passing them down to the back of his knees.

On closer inspection the genuine case would have an anxious expression, would be anæmic, underweight for size, and the veins of his arms would be thickened and feel fibrous.

There might be old scars over knees and tibiæ and perhaps darkish stains on the body.

A Wassermann reaction of his blood would be positive.

A full course of Salvarsan or Galyl cured the condition, and from a whining, disobedient type of prisoner he would become alert, and one might almost say keen for work.

From the above, one may conclude that the syndrome of anæmia, myalgic pains, fibrous veins, anxious look, and possibly some wasting is characteristic of a certain stage of uncured syphilis in natives. The probability is that these patients would become in time cases of Locomotor Ataxia—if they lived.

Altogether some 68 prisoners presented themselves as Out-patients suffering from "waist pains." Those who obviously had myalgia due to sprain, cold, etc., are not included here.

Of these, 51 gave a definite positive Wassermann reaction, nine gave a partial hæmolysis, and eight were negative.

Salvarsan treatment gave excellent recovery to 58 of the 60 (51 9) and to two of the eight negatives. The remaining six of the negatives were not benefitted at all.

The two positive exceptions deserve comment.

The first patient was very anæmic, markedly congested in his lungs, and had difficulty in walking owing to pains. The knee jerks were only got on reinforcement—the fingers were clubbed. There was no albumen in his urine.

He appeared phthisical, but no T.B. could be found. His Wassermann proving positive a diagnosis of Gumma of the Mediastinum was made. He was very weak (incidentally, he came to Prison in this condition), and it was doubtful if he would stand “606.” However, it was decided to risk it. He improved remarkably. The bronchiectasis began to mend. He was given a second injection, and still improved, although the reactions upset him considerably. Fearing to go further he was not given any more injections, and he speedily went back to his old condition and died. A post-mortem examination proved the diagnosis correct. The interest lies in that, had the bold treatment been persevered with, he might have made a recovery.

The second case was different. He had tubercular ulcerating glands of the neck, had had many previous attacks of Dysentery, and could scarcely walk on account of pains in the legs and a gumma in his calf muscles. He was treated, and in a month could run up and down the ward. Unfortunately, his bowel had been so severely ulcerated, he could not absorb his food, and he died of Asthenia four months later. A post-mortem showed the scars of healed gummata in his liver and a healed gut devoid of large patches of mucous membrane.

One case of incipient Locomotor Ataxia was treated and made an excellent recovery.

A half a dozen of these “rheumatism” cases, taken as they came, gave an average Hæmoglobin percentage of 55 per cent. and an average red count of 3,950,000.

If the material is to be had, at least four injections should be given. In the case of Salvarsan, four gram, six gram, six gram, and six gram were given. Using Galyl the initial dose was 0·25 gram, then ·3, then ·35, and lastly 0·4 gramme.

These patients suffered from severe rigors after the injections, but next day usually stated they felt much better and were hungry. This type of medicine appeals to the native, for the reasons if it shakes him up well it must be strong and hence curative. In fact, some prisoners when they felt seedy have come and asked for injections. It may be asked what the exact value of a positive Wasserman Reaction is, considering the presence of Yaws, Malaria, Leprosy. As far as these figures go, Malaria appears to have no influence on a Wassermann Reaction. Leprosy is not difficult to diagnose as a rule and so may be discounted.

Yaws, however, is different, since it leaves stains behind, which, however, are more pronounced than those of Syphilis. Cases of acute Yaws give a very positive Wassermann Reaction. Tertiary yaws may give an indefinite reaction, *i.e.*, partial hæmolysis or a good positive. But some yaws cases apparently become cured after the secondary eruption, and these give a negative Wassermann. Thus, if the Wassermann is positive, injections will do good either way, whereas if negative it means the patient has neither Syphilis nor Yaws or else healed Yaws. Now, natives will definitely tell you that once they have had Yaws they cannot contract the disease again. If the Wassermann Reaction is negative, it should be possible to reinfect them.

I had hopes of experimenting to decide this point, but so far have not had the opportunity. Much interesting work remains to be done in this sphere.

One thing is very certain. Syphilis is one of the great health undermining factors in Sierra Leone, and the abundant use of organic arsenic compounds should do much to improve the general health of the community.

Sanitation.—The sanitary state of the Prison has been excellent throughout the year.

I have again to thank the Superintendent for his willing assistance, and especially the Acting Superintendent for his splendid work during the Influenza Epidemic.

I have the honour to be, Sir,

Your obedient Servant,

(Sgd.) W. A. YOUNG,

Medical Officer,

i/c Prison.

January 19, 1919.

ANNUAL REPORT OF CLINE TOWN STATION, 1918.

BY DR. C. H. ALLAN, *Senior Medical Officer.*

During the year the following Medical Officers had charge of the Station:—

Dr. T. F. G. Mayer during January.

Dr. N. S. Deane, February.

Dr. C. H. Allan from February until the end of the year.

Dispenser Wright succeeded Dispenser Betts at the commencement of the year.

PUBLIC HEALTH.

The health of the Government Officials showed, except for the Influenza epidemic, considerable improvement compared with the previous years, the three invalidings amongst the Europeans were all for non-climatic diseases, namely, Neurasthenia, Gastritis and Carcinoma. There were no deaths amongst the non-native officials. The West Indians employed in the Locomotive Department, however, had a high rate of sickness from Subtertian Malaria, but this improved during the latter part of the year, owing no doubt largely to channel cutting in the neighbouring streams by the Sanitary Department.

One West Indian fitter was invalided out of the Colony for Heart Disease.

The mosquito proof isolation shed of the same type as the Freetown one was completed in February, but only three cases of Chicken-pox were seen in the neighbourhood.

An outstanding feature was the further diminution in the number of cases of Amœbic Dysentery, only nine, compared with 60 in the previous year, being treated.

In February the Railway placed a conveniently situated bungalow at the disposal of the Medical Department, enabling night visits to be more easily undertaken than from the Medical Officers' Quarters at Miramir.

The sanitation of the compounds is under the management of the Maintenance Engineer. This is most efficiently carried out, particularly the disposal of household rubbish which goes from the covered dustbins outside the kitchens direct to the incinerator. The large dustbins as used in the Freetown streets are thus dispensed with. The chief breeding foci for flies is undoubtedly the large mango trees planted before the railway site was laid out, and considerable clearance of these has been made during the year. Cassias and similar shady trees have been substituted.

There are 45 quarters for Europeans and West Indians, and these are mostly situated in the main compound of 47 acres. Seventy-one men are available for bushing and sanitary work, the bushing gangs being occasionally taken away for railway work.

At the Dispensary, which was only opened in 1913, the new cases attended were 4,419, including 898 cases of Influenza; the subsequent attendances numbered 2,555.

ANNUAL MEDICAL REPORT OF BONTHE, SHERBRO DISTRICT, FOR 1918.

The town and district were under the charge of Dr. McConaghy, Medical Officer, from the beginning of year until February 12th, when he handed over to Dr. Mayer, Senior Medical Officer, who in turn was relieved by me, Dr. Murphy, Medical Officer, on December 20th, 1918, who now writes report.

First Class Dispenser Mr. C. H. A. Johnson has been in charge the whole of 1918. Female Nurse Lucinda Johnson also for the whole year, except for two months' leave, end of March to May, during which time she was relieved by Nurse King from Freetown.

Male Nurses.—Mr. Turner from beginning of year to May was replaced by Mr. Morgan from that date until present time.

Until about the last quarter of the year the general health of town and district had been fair.

There were the usual prevalent diseases including: Bronchitis, Rheumatism, Digestive troubles, Ulcers, etc., etc., but showing no marked difference with other years. Malaria also present but not markedly so over other years.

There were numerous cases of round worm, some tape worm, also cases of Ankylostomiasis.

As compared with 1917, there were 351 more cases treated.

1917—2,892 cases, new.

1918—3,243 cases new, but at least 751 of these cases were due to Influenza, a quite unusual disease; up to the coming of this disease everything pointed to a fewer number of cases for 1918.

European Officials.—The health of the European Officials was fair. There were four stationed here (two for short periods only, 43 days and 11 days) during the year. Other officials passed through but were not stationed here.

Total number of European Officials on sick list during 1918, 1.

Total number of days spent by European Officials on sick list during 1918, 3.

Native Officials.—Average number stationed in Bonthe at any one time about 29.

The general health has been fair, except for the epidemic of Influenza, but no deaths and no invalidings.

Total number of Native Officials (cases) on sick list during 1918, 43.

Total number of days spent by Native Officials on sick list during 1918, 379.

Police.—Influenza, 25 cases, no deaths ; health otherwise fair.

Prisoners.—Except for Influenza, health good ; five treated in Hospital. No deaths. Not many prisoners in gaol at any time ; average 10, or less.

Non-Official European Population.—Averaging about 23. At any one time, except Influenza, no special disease prevalent. One death from Pneumonia following Influenza. General health not perhaps so good as in previous year, possibly due to overtime, fewer staff for the work, and war worries, but very fair considering.

Non-Official Native Population.—Except for Influenza, nothing unusual, health fair.

Bonthe Town and York Island only.—Population about 5,000.

Total births, 62 (64, 1917).

Total deaths, 120 (94, 1917).

Total infantile deaths age 1 year up to , 30 (26, 1917).

Amongst the female cases were :—

10 Midwifery cases, including :—

3 Delayed Labour.

2 Retained Placenta.

5 Normal.

York Island was visited as usual once weekly.

The chief epidemic disease was Influenza (throughout whole district), of which there were 751 cases treated at or in Hospital, between September and October. Six cases of these died in Hospital. There was probably even a larger number who did not attend. There were six cases of Small-pox and some cases of Chicken-pox ; also a few cases of Measles, some fatal.

There were 50 surgical operations, including 31 Salvarsan or Galyl Injections.

Hospitals and Dispensaries.—Colonial Hospital, Bonthe, and Isolation Hospital, Bonthe Bai.

There were 260 in-patients treated (including 9 at Bonthe Bai ; 6 Small-pox, etc.).

Chief Diseases.—Influenza, Syphilis, Rheumatism, Bronchitis, Malaria, Ulcers (various), Ankylostomiasis, Yaws, etc.

There were 20 deaths in Hospital, 6 from Influenza.

(Sgd.) J. C. MURPHY,

Acting Senior Medical Officer.

ANNUAL MEDICAL REPORT OF PUJEHUN, NORTHERN SHERBRO DISTRICT, FOR 1918.

The total number of out-patients treated during the year 1918 was 3,247, being an increase of 237 on the year 1917.

Sixteen Native Officials were placed on the sick list during the year, the total number of days off duty being 310, the chief reason for this long period being Influenza Endocarditis.

Court Messengers.—Before the incidence of the Influenza Epidemic, the health of the Court Messengers was on the whole good. In September, however, every Court Messenger with the exception of one was put on the sick list suffering from Influenza. All the cases were of the pulmonary type. There were two deaths, ultimate causes in each case being pneumonia.

During the year 122 in-patients were treated in the Hospital, being an increase of 32 on the year 1917. There were three deaths, all due to Influenza.

Two operations were performed under chloroform, namely, amputation of hand and paracentesis of anterior chamber of eye in a case of Iritis with threatened glaucoma; the latter operation was performed on a European.

In addition there have been many minor operations performed.

(Sgd.) J. M'CONAGHY,
Medical Officer.

PUJEHUN,
21st January, 1919.

ANNUAL MEDICAL REPORT, 1918, DARU RAILWAY DISTRICT.

The work of the Medical Officer in this District is almost entirely confined to the official population.

The staff consists of one Medical Officer and two Dispensers, one of which is stationed at Kanre Lahun, where there is a Company of the West African Frontier Force with three European Officers.

PUBLIC HEALTH.

The general health of the District for the year has, with the exception of the Influenza Epidemic, been good.

I. GENERAL DISEASES.

The majority of the cases treated have been of a trivial nature, Rheumatism, Bronchitis, Ulcers and slight injuries being the most common.

II. COMMUNICABLE DISEASE.

Of the insect-born diseases, Malaria has been by far the most common, especially among the Europeans.

Influenza was very prevalent during the months of October and November, causing a large number of deaths among the native population, and three deaths among the European traders.

HELMINTHIC DISEASES.

Round and Tape Worms were the only cases treated, no Guinea Worm or Bilharzia seen. Ankylostomiasis is probably present, but no cases came for treatment.

Sickness of all kinds is more common in the intervals between the wet and dry seasons.

EUROPEAN OFFICIALS.

The general health of the European Officials has been fair; there were no serious cases of sickness. The commonest diseases treated were Malaria, Rheumatism and Gastric troubles. Influenza was responsible for five cases, none of which were severe.

Total number of Europeans on sick list for the year was 29.

Total number of days on sick list, 210.

NATIVE OFFICIALS.

The general health of the Native Officials has been good; there were four cases of Influenza.

Number of Native Officials on the sick list during the year was 10.

Number of days on sick list, 63.

Cases amongst the soldiers constitute the great majority of the cases treated in the District; as a rule they are of a trivial nature. Pneumonia was responsible for one death. Influenza attacked the troops very severely, there being 293 cases and eight deaths.

NON-OFFICIAL EUROPEANS.

The health of these up to the time of the Influenza Epidemic was good. Fifty per cent. of them were attacked by Influenza, causing three deaths.

NON-OFFICIAL NATIVES.

Very few of these come to the Hospital for treatment, and the Medical Officer has little chance of visiting the outlying districts owing to the large official population in Daru. Influenza attacked the whole district, causing a large number of deaths.

HOSPITALS AND DISPENSARIES.

The Hospital at Daru consists of a building composed of mud walls strengthened by bricks, with a cement floor and iron roof. The Hospital is in a bad state of repair, and the store accommodation is very inadequate. It was inspected by the General Officer Commanding, Sierra Leone, during the first week of January, 1919, who ordered a board to be held to report on its condition.

The Hospital at Kanre Lahun is a bush building containing four beds.

(Sgd.) H. M. NEWPORT,
Medical Officer, Daru.

RONIETTA DISTRICT.

ADMINISTRATIVE.

MOYAMBA.

Doctor : M. C. F. Easmon.

Dispensers : M. P. Neville and T. C. Williams.

SEMBEHUN.

Dispenser : M. O. Frazer.

Assistant Public Vaccinator : Abdulai Kamara.

Sanitary Gang, average number, 6.

PUBLIC HEALTH.

Early in the year the Small-pox epidemic of previous year subsided.

The chief feature of the year was the spread of the Influenza epidemic throughout the District.

Starting along the railway line early in September it rapidly spread to the remoter portions of the District, infecting at least 90 per cent. of the population, and about 5 per cent. dying. It lasted till the end of November, and by Christmas was over. Total deaths in District about 8,000.

EUROPEAN OFFICIALS.

The majority of the Europeans had influenza with one death (in the Nursing Home).

Number on sick list, 14 ; number of days on sick list, 54 ; average, 3·8 days. Five cases were sent down to the Nursing Home ; one death ; one invalided.

NATIVE OFFICIALS.

They were also affected with Influenza, nearly all being down with it. There were four deaths ; 62 Native Officials were on sick list for 600 days ; average, 9·4.

(This does not include the Influenza period, when all work was suspended for over two weeks.)

COURT MESSENGERS, WARDERS AND MAIL CARRIERS.

General health good.

Two deaths in the year—Heart Disease and Paralysis.

No invalidings.

PRISONERS.

The general health during the year was good. At the time of the Influenza outbreak there were 30 prisoners ; all had it, and one died.

NON-OFFICIAL EUROPEAN POPULATION.

General health good.

Commonest disease was Influenza.

One death from Yonnibannah, but died in Freetown, from Influenza.

NON-OFFICIAL NATIVE POPULATION.

Estimated population of Moyamba is 1,400. This is the permanent population, but there is a considerable floating population, as it is the District Headquarters and seat of the Circuit Court. Syrians.—There were five deaths among the Syrian population due to Influenza.

SANITATION.

A GENERAL REVIEW.

At Boia and Moyamba the sanitary gangs carried out their work satisfactorily. The amount voted for sanitary labour was reduced (for Moyamba). The water supply has not yet been carried down to the prison as has been strongly advocated.

(1) Special preventive measures were started against the spread of the Influenza epidemic, but it had got a good hold before its presence and significance was realised. The measures adopted were the use of mouth washes, gargles, and isolation and segregation. In Moyamba are three self-contained institutions where such measures could be enforced—the prison, the Catholic Mission and the American Mission. In the former two these measures merely delayed the onset, but the American Mission, at the time with 50 girls, did not have a single case, and it is situated in the middle of the town.

VACCINATION.

During the Influenza epidemic the work of the Public Vaccinator was suspended, and this no doubt, with the natural aversion to vaccination, accounts for the smaller number as compared with other years:

			1915.	1916.	1917.	1918
Total vaccinated	...	...	114	5,595	8,228	3,703
Total successful	...	...	79	3,891	4,801	2,133

A second Vaccinator was applied for but not appointed.

RECOMMENDATIONS FOR FUTURE WORK.

Extension of the pipe from water supply to the prison and clerks' quarters.

Appointment of a second Vaccinator.

METEOROLOGY.

The total rainfall (83.05 in.) was smaller than that of previous years, but was more evenly distributed. The rainy season started in March and went on till December. The lowest temperature recorded was 55° F. on January 31st, and on the same day was the greatest daily range, 37.

In March on three days the maximum shade temperature reached 99° F. The greatest daily rainfall was 3.4 in. on October 4th.

HOSPITAL AND DISPENSARY.

The wooden dispensary building and the mud-walled Hospital building continue to grow more unsuitable.

The commonest diseases treated were Rheumatic affections, Bronchitis, Digestive troubles, Fever and Ulcers, while in children Round Worms were very plentiful.

Number of cases treated at Moyamba : New, 3,167; old, 2,552.

(Sgd.) M. C. F. EASMON,
Medical Officer.

MOYAMBA,
January 20th, 1919.

ANNUAL MEDICAL REPORT OF PO RAILWAY DISTRICT FOR
1918.

Dr. Taylor was in charge till the 19th of March, and was then relieved by Dr. Deane up to June 19th, when Dr. Deane was again relieved by Dr. Taylor, who remained till the end of the year.

European Officials.—The average number of European Officials was 13; of these, nine reside at Bo, *e.g.*, six of the Railway, three of the Bo School; and at Mattru, Gerihun, Blama, Hangha, one Railway official each.

There were two non-officials at Bo, three at Gerihun, and six at Blama.

There were 29 European Officials on the sick list for a total of 195 days; eight of these were sent to the Nursing Home, Freetown. Two invalidings. No deaths.

The chief cause of sickness was Malaria. Seven Officials were on the sick list for 42 days suffering from Malaria; 22 from Gastritis, Amœbic Dysentery, Diarrhœa, Dyspepsia, Influenza, Measles, Cellutitis, Lymphangitis and Hepatic troubles for 153 days.

Native Officials.—There were 73 Native Officials on the sick list for 662 days. The chief diseases were Malaria, Bronchitis, Constipation, Rheumatism, Influenza, Gastric and Hepatic troubles.

Death.—Three from Influenza (one at Bo and two at Blama).

OUT-PATIENTS.

	1916.	1917.	1918.
New cases	2,026	2,639	3,471
Subsequent attendance	573	1,264	5,532
Total	2,599	3,903	9,003

In-Patients.—There were 87 patients admitted into the hospital; three deaths due to Ascites, Gun-shot Wounds and Punctured Wounds.

The chief cause of diseases among Out and In-patients was Rheumatism, Bronchitis, Influenza, Boils, Malaria, Constipation, Wounds, Caries of Teeth, Gastritis, Hepatitis and Venereal diseases.

Public Health.—The general health of the Station and district during the year 1918 has been, on the whole, satisfactory.

Epidemics.—Sixty-two cases of Influenza and 34 cases of Measles were treated among the boys of the Bo School. No deaths. A separate report has been forwarded on the epidemic of Influenza.

Special Diseases.—Syphilis, Gonorrhœa and Soft Chancre are common.

Bilharziasis.—Only one case was treated during the year among the boys of Bo School.

Operations.—Twenty-five cases were operated upon during the past year, namely :—

Plymesia	...	...	...	...	...	...	...	6
Pyæmic Abscesses	...	...	..	...	...	...	...	13
Inguinal Hernia (Radical Cure)	...	...	...	...	...	...	...	1
Punctured Wounds	...	...	...	...	...	...	...	1
Bubo	...	...	...	...	...	...	...	1
Perineal Abscess	...	...	...	...	...	...	...	1
Tying Brachial Artery	...	...	...	...	...	...	...	1
Exploration of Tumour of Face	...	...	...	...	...	...	...	1

Deaths.—One, from severe punctured wound with protusion of perforated intestines.

Hospital fees amounted to £11 15s. 6d.

Kennema was visited as heretofore during the year under review. The Railway Officials' quarters at Hangha, Blama, Gerhun and Mattru were visited and found to be in proper sanitary condition.

(Sgd.) W. O. TAYLOR,

Bo, 10th January, 1919.

Medical Officer.

FROM THE MEDICAL OFFICER, KISSY,

TO

THE HONOURABLE THE PRINCIPAL MEDICAL OFFICER,
FREETOWN.

SIR,—I have the honour to submit the Annual Report of the Kissy Institutions for the year 1918.

The following Officials visited the Institutions during the year : -

The Hon. The P.M.O., Dr. Tweedy (periodically).

Fleet Surgeons Laing and Miller.

Dr. Young, M.O. Prisons.

Messrs. Lake and Spencer, P.W.D.

The Staff consists of :—

1 Medical Officer.

1 Medical Dispenser (2nd Class).

6 Female Nurses.

1 Keeper.

1 Assistant Keeper.

2 Dressers.

6 Attendants.

4 Temporary Attendants.

3 Cooks.

1 Laundress.

10 Labourers.

Changes in the Staff.—Dr. W. F. Campbell was in charge of the Institutions throughout the year.

Foeday (temporary attendant) dismissed.

Brimah appointed. Mr. A. W. Macauley appointed keeper L.A., *vice* O. J. Wright, deceased.

Mrs. Emma Jones appointed Assistant Nurse, F.I.H.

Mr. Jacob Lewis appointed Medical Dispenser *vice* Dispenser E. F. Smith transferred to York.

Finance.—Total revenue—Fees collected from out-patients during the year 1918, £8 6s. 8d., a decrease of 14s. 9d. as against 1917.

The Dispensary, Kissy.—New cases, male 719, female 678, total 1,397. Old cases, male 868, females 986, total 1,854. General total of new and old cases 3,257, an increase of 87 as against 1917.

Wellington.—New cases 355, old cases 586, total 941, an increase of 109 as against 1917. The prevailing diseases were—Rheumatism, Lumbago, Bronchitis, Dyspepsia, Constipation, Diarrhoea, Whooping Cough, Round Worms, Ulcer, Dysentery, Tuberculosis, Syphilis, Malaria Fever, Dental Caries, Influenza.

Public Health.—At the commencement of the year to the middle of August the general health of the Kissy Village has been, on the whole, very good, but the influenza epidemic which broke out in the closing days of August and which continued throughout September was attended with unfavourable results.

There were 10 cases of Tuberculosis admitted into the Male Incurable Hospital during the year under review. These cases were sent from Freetown.

Whooping Cough of a mild character was prevalent amongst children during the harmattan season.

There were many cases of intestinal Parasites throughout the year, Amoebic Dysentery, Pneumonia, Diarrhoea, Rheumatism, Aestivo-Autumnal Bronchitis, Lumbago, Dyspepsia.

Native Officials on sick list 200, with three deaths, but no invalidings.

Civil Police on sick list 4, invalided 1, died nil.

Sanitation.—The latrines are of the pan and dry earth system used in all the Institutions and Officials' quarters.

Night soil is buried in trenches in a suitable site, all rubbish and house refuse are emptied into a pit and burnt.

Empty tins and bottles were broken and buried.

The village is on a slope and well adapted for drainage.

Water Supply.—The water is from a natural spring and is collected into a dam and conveyed by pipes to the Institutions and stand-pipes, which are

three in number. The meat and other foodstuff supplied by the Contractors during the year 1918 were good.

Meteorological Observations. — The highest maximum shade temperature registered was 92°F. on March 19th, and the lowest minimum shade temperature registered was 66°F. on November 17th.

Lunatic Asylum.—There were 42 males and 16 female patients admitted during the year under review, 28 of these were discharged cured, relieved and not improved, of these a female patient absconded. There were 10 deaths, 9 males and 1 female. At the end of the year there were 105 males and 43 female patients remaining, making a total of 148.

The deaths were due to Amoebic Diarrhoea, General Paralysis of the Insane, Influenza and its sequel, Ascitis.

From the number of admissions it will be seen that there was an increase of 16 above the previous year.

There were no cases of accident during the year.

Coroner's inquisition was held on each death and verdict was Natural Cause.

The small mortality during the Influenza epidemic can only be accounted for by the fact that patients were immediately attended to on reporting sick (apart from age, incidence being 15 to 35).

Male lunatics who are lucid assist in sanitary work and attended to the garden. Mending and washing of the inmates clothes are done by the female lunatics who are reasonable and physically fit. Both male and female lunatics are always in charge of reliable nurses and attendants.

The discipline of the Institutions was well maintained throughout the year.

Female Incurable Hospital. — There were at the beginning of the year 52 patients, 55 were admitted during the year, making a total of 107. There were 55 discharged and 24 deaths; remaining in hospital at the end of the year, 25. The deaths were due to Debility, Syphilitic Exhaustion, Paralytic Exhaustion, Hemiplegic Exhaustion, Senility, Influenza, Asthma, Diarrhoea, Tuberculosis, Chronic Ulcer, Nephritis, Pneumonia. During the year this hospital was overcrowded owing to the large number of cases sent from the Colonial Hospital for admission during the Influenza epidemic, and in order to relieve the congestion it was found necessary to send some of the patients to the Lazaretto, and a nurse was engaged to look after them.

Male Incurable Hospital.—At the commencement of the year there were 84 patients, 193 were admitted during the year, 121 were discharged cured, relieved, not relieved, and 88 died. Remaining in hospital January 1st, 1919, 68 patients.

The deaths were due to Pulmonary Tuberculosis, Senility, Paralytic Exhaustion, Syphilitic Exhaustion, Chronic Diarrhoea, Ascites, Epilepsy, Nephritis, Tetanus, Influenza, Hemiplegic Exhaustion, Dysenteric Diarrhoea.

There were three Lepers in hospital at the beginning of the year 1918.

Admitted during the year 4, total 7; died 1, absconded 1, discharged 2; remaining in hospital January 1st, 1919, 3.

Infectious Diseases Hospital.—There were three cases of Small-pox in hospital at the beginning of the year 1918, and there were 20 admissions of Small-pox and 34 of Chicken-pox, making a total of 57; cured 48, died 8; remaining in hospital January, 1919, 1.

I have the honour to be,

Sir,

Your obedient servant,

(Sgd.) W. F. CAMPBELL,

Medical Officer.

KISSY, 17th February, 1919.

RETURN OF OUT-PATIENTS SHOWING DETAILS OF CASES TREATED IN EACH MEDICAL DISTRICT IN THE YEAR 1918.

DISEASES.	With Medical Officers.							With Dispensers only.										Total.							
	Freetown Hospital.	Cline Town.	Freetown Gaol.	Kissy.	Moyamba.	Bo.	Daru.	Wellington.	Pujehun.	Bonthe.	Bandajuma.	Kennema.	Waterloo.	Batkanu.	Regent.	Kent.	York.		Banama Islands.	Sunbuyah.	Port Lokkoh.	Kanre-Lahun.	Makene.	Sembahun.	Kaballa.
INFECTIVE DISEASES—																									
Beri Beri ...	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cerebro-Spinal Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chicken-pox ...	5	1	2	—	1	2	2	—	1	6	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Cholera ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dengue ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Diphtheria...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dysentery...	120	9	149	4	3	36	23	—	39	50	6	23	16	15	8	12	—	1	1	6	10	5	19	19	574
Endocarditis (Infective)...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Amoebic Cysts	—	—	45	—	—	—	—	—	—	7	—	—	5	—	—	—	—	—	—	—	—	—	—	—	45
Erysipelas...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12
Gonorrhoea ...	123	26	117	3	76	77	72	4	101	46	50	71	11	16	16	7	52	11	60	28	61	29	67	39	1163
Influenza ...	1102	898	329	90	288	384	299	13	252	791	41	209	109	147	12	18	36	63	45	250	94	247	152	78	5947
Kala-Azar ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Leprosy (a) Nodular	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	3
(b) Anaesthetic...	1	—	2	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	2	—	7
Malaria (a) Tertian	152	14	—	72	—	—	169	3	10	174	—	78	—	—	116	57	25	—	—	—	—	60	—	17	947
(b) Quartan	—	—	—	—	—	—	—	—	1	5	—	19	—	—	—	—	—	—	—	—	—	—	—	—	25
(c) Zestivo-Autumnal...	315	199	6	56	119	144	—	19	92	17	29	—	129	27	—	—	36	22	58	30	23	—	8	—	1329
(d) Chronic Malaria	—	13	76	—	18	—	—	—	—	88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	195
(e) Blackwater...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Measles ...	—	—	—	—	9	39	9	—	2	7	—	11	—	2	3	—	—	—	—	—	1	2	1	12	99
Malta Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Plague ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pneumonia	97	6	1	1	—	5	2	—	2	—	3	—	7	2	5	4	—	—	—	7	—	6	1	2	151
Rabies ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Relapsing Fever ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rheumatic Fever...	63	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	68
Septicæmia	26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27
Small-pox ...	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34
Syphilis (a) Primary	2	—	2	—	3	—	26	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	62
(b) Secondary	—	—	56	—	2	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	88
(c) Tertiary	95	47	2	20	7	18	—	—	14	36	11	15	6	73	3	3	3	19	36	72	9	29	114	—	632
Tetanus ...	14	—	—	—	1	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	16
Trypanosomiasis (Sleeping Sickness)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Tuberculosis	32	3	2	1	3	1	—	—	—	7	—	—	3	—	1	—	1	—	—	5	—	—	3	3	65
Whooping Cough...	1	13	—	3	1	6	20	6	5	3	7	—	—	2	—	—	8	—	—	6	—	—	1	1	86
Yaws ...	15	—	—	3	2	3	—	—	1	53	1	5	1	7	2	9	1	4	2	9	6	20	4	26	174
Yellow Fever	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Other Diseases	13	—	—	—	—	2	1	—	—	—	22	—	—	—	—	—	—	—	—	—	—	—	—	—	38
INTOXICATIONS—																									
Alcoholism	2	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Morphinism	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Others ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

GENERAL DISEASES—														
Anæmia ...	...	24	18	5	5	6	11	4	—	3	13	8	1	200
Anæmia (Pernicious) ...	...	2	—	—	—	—	—	—	1	—	—	—	—	3
Diabetes ...	...	1	—	—	—	—	1	—	—	1	—	—	—	3
Exophthalmic Goitre ...	...	—	—	—	—	—	—	—	—	—	—	—	—	6
Gout ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Leucocythæmia ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Hodgkin's Disease ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Myxœdema ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Purpura ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Rickets ...	...	—	—	—	—	—	—	—	—	—	—	—	—	2
Scurvy ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Diseases, including Rheumatism	...	634	277	12	228	444	332	342	32	137	8	94	320	4811

LOCAL DISEASES.

DISEASES OF THE NERVOUS SYSTEM—

Sub-section 1.														
Neuritis ...	...	10	1	—	2	—	1	—	—	5	1	—	—	25
Meningitis ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Myelitis ...	...	—	—	—	—	—	—	—	—	—	—	—	—	1
Hydrocephalus ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Encephalitis ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Abscess of Brain ...	...	1	—	—	—	—	—	—	—	—	—	—	—	1
Congestion of Brain	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Diseases ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Sub-section 2.														
Apoplexy ...	...	4	—	—	—	—	1	—	—	—	1	—	—	7
Paralysis ...	...	8	1	—	8	7	1	—	—	1	—	—	—	47
Chorea ...	...	—	—	—	—	—	—	—	—	—	—	—	—	—
Epilepsy ...	...	13	—	—	—	4	1	1	—	—	—	—	—	30
Neuralgia ...	...	71	30	2	38	28	12	26	6	12	4	34	9	449
Hysteria ...	...	6	—	—	—	3	—	—	—	—	1	—	1	11
Other Diseases ...	...	19	—	6	—	—	17	3	—	—	3	—	6	146
Sub-section 3.														
MENTAL DISEASES—														
Idiocy ...	...	—	—	1	—	—	—	—	—	—	—	—	—	1
Mania ...	...	1	—	—	—	—	—	—	—	—	1	—	—	4
Melancholia ...	...	1	—	—	—	—	—	—	—	—	—	—	—	1
Dementia ...	...	2	—	1	—	—	—	—	—	—	—	—	—	3
Delusional Insanity	...	1	—	—	—	—	—	—	—	—	—	—	—	1
Other Diseases ...	...	1	—	—	—	—	—	—	—	—	—	—	—	3
DISEASES OF THE EYE—														
Conjunctivitis ...	...	106	27	3	4	19	25	23	2	19	26	2	35	387
Keratitis ...	...	—	—	—	—	—	—	—	—	4	—	—	—	5
Ulceration of Cornea	...	—	3	—	—	—	—	—	—	4	2	—	—	12

RETURN OF OUT-PATIENTS SHOWING DETAILS OF CASES TREATED IN EACH MEDICAL DISTRICT IN THE YEAR 1918—continued.

DISEASES.	With Medical Officers.										With Dispensers only.										Total.					
	Freetown Hospital.	Cline Town.	Freetown Gaol.	Kissy.	Moyamba.	Bo.	Daru.	Wellington.	Pujehun.	Bottle.	Bandajuma.	Kennema.	Waterloo.	Batmanu.	Regent.	Kent.	York.	Banana Islands.	Sumbayah.	Port Lokkoh.		Kanre- Lahun.	Makene.	Sembehun.	Kaballa.	
DISEASES OF THE EYE—continued.																										
Iritis ...	1	—	—	—	—	—	—	—	4	4	4	—	3	—	4	1	—	—	1	—	—	—	—	—	1	
Optic Neuritis ...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	
Cataract ...	11	3	1	—	—	—	—	—	1	6	—	2	—	—	—	—	1	—	—	—	2	—	1	2	1	
Other Diseases ...	1	—	3	—	—	2	9	—	—	—	—	—	3	—	4	—	—	—	—	—	—	—	9	—	33	
DISEASES OF THE EAR—																										
Inflammation ...	3	13	8	—	12	15	3	1	6	—	—	6	1	9	7	8	4	—	5	5	—	1	14	4	120	
Other Diseases ...	56	7	—	8	19	22	12	—	14	21	5	9	9	1	1	—	5	8	—	—	9	5	—	7	228	
DISEASES OF THE NOSE																										
Others ...	76	51	7	—	16	23	4	—	3	4	—	18	38	11	47	—	8	8	22	10	8	1	5	11	375	
DISEASES OF THE CIRCULATORY SYSTEM—																										
Pericarditis ...	1	—	2	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	5
Endocarditis ...	8	—	—	—	1	—	—	—	25	3	—	—	—	—	—	4	—	—	8	—	—	—	—	—	—	37
Valvular—Mitral ...	21	2	56	—	8	10	12	—	4	1	3	1	—	—	—	—	7	—	—	—	—	—	—	2	137	
Aortic ...	3	—	4	—	1	—	—	—	2	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
Tricuspid ...	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Pulmonary ...	—	—	—	—	—	—	—	—	8	4	—	—	—	—	—	—	—	—	—	—	—	—	1	—	13	
Arterial Sclerosis ...	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	9	
Aneurism ...	2	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	
Other Diseases ...	18	1	24	—	7	12	1	—	—	3	—	10	6	2	—	—	—	1	—	5	—	6	7	—	103	
DISEASES OF THE RESPIRATORY SYSTEM—																										
Laryngitis...	53	—	1	3	3	—	—	1	—	—	—	—	14	2	—	—	—	—	—	7	—	2	—	4	90	
Bronchitis ...	523	451	105	146	329	464	130	66	210	288	169	171	337	144	166	108	155	77	59	114	63	111	99	169	4654	
Broncho-Pneumonia ...	167	—	—	15	—	1	—	—	—	5	—	1	—	—	—	—	—	—	—	1	—	—	1	1	192	
Abscess of Lung ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Gangrene of Lung ...	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Emphysema ...	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17	
Pleurisy ...	72	18	1	3	11	4	2	2	8	6	4	5	12	7	2	1	2	—	—	1	—	1	—	1	166	
Empyema ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Other Diseases ...	20	8	1	1	47	6	2	1	2	4	4	11	40	5	7	1	24	—	5	2	3	—	2	—	199	
DISEASES OF THE DIGESTIVE SYSTEM—																										
Stomatitis ...	42	7	—	7	17	24	6	—	3	4	4	3	52	5	2	4	—	2	20	11	—	—	3	9	228	
Caries of Teeth ...	353	90	28	36	71	85	40	3	38	70	29	35	34	28	38	16	41	11	18	18	28	30	—	35	1175	
Glossitis ...	18	10	—	—	—	1	—	—	1	2	—	—	—	—	11	—	3	—	—	—	—	—	—	—	46	
Sore Throat ...	141	40	—	—	9	14	—	—	3	—	1	7	28	1	2	3	5	1	1	1	4	1	1	4	273	
Inflammation of Tonsils...	83	11	3	11	2	7	17	1	4	23	1	7	10	7	4	—	13	4	21	2	3	2	4	1	244	
Gastritis ...	23	5	—	6	8	16	1	1	11	5	1	1	4	—	—	1	—	2	30	3	—	—	1	6	125	
Ulceration of Stomach ...	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	

[illegible]

DISEASES OF THE LYMPHATIC SYSTEM—

	36	24	—	7	3	6	3	—	4	3	6	—	4	2	5	6	3	4	9	—	1	8	—	11	2	188
	74	6	8	4	23	14	24	1	18	1	19	3	8	5	9	19	13	5	1	5	14	6	27	4	7	313
	6	6	—	—	7	3	1	—	1	4	—	—	—	—	—	—	—	—	2	—	—	—	1	—	—	38
	22	—	—	—	—	—	—	—	1	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26
	7	2	3	—	—	1	—	—	—	—	—	2	—	—	2	1	—	—	—	—	—	—	1	3	—	26
	10	—	1	—	2	—	—	—	—	—	—	1	—	2	—	—	3	4	2	—	—	—	20	—	—	43
Splenitis	24	—	7	3	6	3	—	4	—	3	—	—	2	5	2	3	4	9	—	1	8	—	11	—	2
Inflammation of Lymphatic Gland	...	6	8	4	23	14	24	1	18	1	19	3	8	5	9	19	13	5	1	5	14	6	27	4	7	313
Suppuration	...	6	—	—	7	3	1	—	1	4	—	—	—	—	—	2	—	—	2	—	—	—	—	1	—	38
Lymphangitis	...	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26
Elephantiasis	...	2	3	—	—	1	—	—	—	—	—	2	—	—	2	1	—	—	—	—	—	—	—	3	—	26
Other Diseases	...	—	1	—	2	—	—	—	—	—	—	1	—	—	—	—	3	4	2	—	—	—	—	20	—	43

DISEASES OF THE URINARY SYSTEM—

[illegible]

DISEASES OF THE GENERATIVE SYSTEM—
Male Organs.

Urethritis	...	2	2	79	13	1	1	1	4	2	1	1	4	67
Gleet	...	...	4	5	1	1	1	1	4	1	1	1	4	22

RETURN OF OUT-PATIENTS SHOWING DETAILS OF CASES TREATED IN EACH MEDICAL DISTRICT IN THE YEAR 1918—continued.

DISEASES.	With Medical Officers.										With Dispensers only.										Total.				
	Freetown Hospital.	Cline Town.	Freetown Gaol.	Kissy.	Moyamba.	Bo.	Daru.	Wellington	Pujehun.	Bonthe.	Bandajuma.	Kemema.	Waterloo.	Batkann.	Regent.	Kent.	York.	Banana Islands.	Sumbayah.	Port Lokkoh.		Kaure-Lahun.	Makee.	Sembahun.	Kaballa.
DISEASES OF THE GENERATIVE SYSTEM—																									
<i>cont.</i>																									
Stricture ...	14	—	—	—	6	4	3	—	2	3	1	1	4	2	5	3	—	1	3	1	—	1	—	—	6
Prostatitis ..	—	—	—	1	—	—	—	—	—	—	—	1	1	—	—	—	—	—	1	—	—	—	—	—	2
Soft Chancre ..	9	3	21	1	19	13	17	—	2	2	6	12	1	—	—	2	1	—	1	—	—	4	6	1	130
Condyloma ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Inflammation of Scrotum	2	—	—	—	1	—	2	—	1	2	—	5	—	—	—	1	—	—	—	—	—	—	—	—	15
Hydrocele ...	10	1	21	1	7	3	3	—	3	4	—	5	4	6	1	2	—	—	—	1	—	1	4	6	83
Orchitis ...	16	7	5	2	20	15	29	—	18	11	3	16	10	13	1	2	7	—	3	3	5	16	2	5	209
Epididymitis ..	4	—	3	1	3	2	—	—	2	—	—	1	—	5	—	1	—	—	—	—	—	2	—	—	24
Abscess of Testicle	1	—	5	—	—	—	—	—	—	—	10	—	—	—	—	—	—	—	—	—	—	—	—	—	7
Other Diseases ...	13	—	1	—	6	2	11	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	4	49
<i>Female Organs.</i>																									
Ovaritis ...	20	—	—	—	1	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	23
Ovarian Cyst ...	5	—	—	—	—	—	—	—	—	—	—	8	6	—	18	—	—	—	—	—	—	—	—	—	5
Endometritis ...	36	—	—	—	7	1	1	—	—	1	—	—	—	—	—	—	—	—	—	6	—	1	15	2	102
Displacement of Uterus	—	—	—	—	2	—	—	—	—	2	—	2	2	—	—	—	—	—	—	—	—	—	—	—	8
Vaginitis ...	4	—	—	—	2	—	4	—	5	25	1	18	8	—	27	3	15	6	19	1	—	3	4	16	21
Amenorrhœa ...	27	14	—	2	18	18	3	—	—	6	2	6	10	2	4	8	1	—	4	2	2	2	3	10	247
Dysmenorrhœa ...	2	14	—	3	1	4	14	—	—	—	2	2	12	1	5	1	1	1	5	2	—	—	—	—	98
Menorrhagia ...	4	7	—	2	8	1	—	1	—	—	2	1	4	1	1	1	—	1	5	2	—	—	2	7	63
Leucorrhœa ...	21	13	—	—	4	—	—	—	—	—	1	—	8	1	4	2	—	—	2	1	—	—	—	—	47
Abortion ...	24	2	—	1	4	—	—	—	—	—	—	2	—	—	1	2	—	—	—	—	—	—	—	—	51
Delayed Labour ...	73	—	—	—	—	—	—	—	—	3	—	—	—	—	2	2	—	—	—	—	—	—	—	—	84
Post-partum Haemorrhage	—	—	—	—	1	—	—	—	—	2	—	—	—	—	1	—	—	—	—	—	—	—	—	—	2
Retained Placenta	5	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	9
Premature Birth ...	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—	3
Puerperal Septicæmia	1	—	—	—	1	—	—	—	1	—	—	1	8	2	—	1	3	—	—	3	—	—	—	2	44
Mastitis ...	14	4	—	1	1	2	2	—	—	—	4	1	1	2	5	3	—	1	—	—	—	—	—	1	42
Abscess of Breast...	20	—	—	3	—	1	—	—	—	13	3	3	11	13	—	—	—	1	—	5	1	—	—	—	127
Other Diseases ...	46	20	—	—	1	—	6	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DISEASES OF ORGANS OF LOCOMOTION—																									
Osteitis ...	1	—	—	—	22	—	3	—	—	—	1	—	1	5	—	—	—	—	6	2	—	3	—	1	45
Arthritis ...	48	77	—	1	5	9	—	—	15	11	98	6	5	—	—	5	—	—	—	6	—	3	1	21	311
Spondylitis ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bursitis ...	21	—	—	—	—	—	—	—	—	2	—	—	1	—	—	—	—	—	1	—	—	—	—	—	26
Other Diseases ...	148	217	53	12	90	72	26	4	115	210	25	91	36	45	6	—	54	11	12	17	74	26	61	37	1472
DISEASES OF CONNECTIVE TISSUE—																									
Cellulitis ...	90	2	4	—	17	12	16	—	—	16	1	—	10	1	2	—	5	—	—	2	—	11	—	2	191
Abscess ...	122	17	4	32	14	20	19	5	19	61	27	20	12	3	5	10	6	—	3	19	5	3	10	10	446
Elephantiasis ...	2	2	—	—	—	—	—	—	—	6	—	1	—	—	—	—	—	—	—	—	—	—	—	—	9
Other Diseases ...	33	12	—	—	—	—	5	—	2	—	—	—	1	3	—	—	—	—	—	—	1	—	—	—	57

ANNUAL SANITARY REPORT

FOR THE YEAR ENDING 31ST DECEMBER, 1918.

BY THE

SENIOR SANITARY OFFICER.

III.—SANITATION.

I.—ADMINISTRATION.

1. Dr. R. Laurie, who, I regret to state, died in England on the 27th of December, went on leave on the 24th of July, and from that date Dr. W. Allan combined the duties of Senior Sanitary Officer and Medical Officer of Health until the 15th of September, when Major R. Farrar, R.A.M.C., T.F., arrived and assumed the duties of Medical Officer of Health. Dr. Allan retained control over the special Anti-Malarial measures in Freetown. Major Farrar collaborated with Dr. Allan in carrying out the Anti-Malarial measures.

2. An important change in the Sanitary Administration of Bonthe, Sherbro, was the passing of Order-in-Council No. 7 of 1918, which placed the control of the markets, cemeteries and slaughter-houses in Bonthe in the hands of the Medical Officer, Bonthe, instead of under the District Commissioner as before.

3. On account of the unsatisfactory condition of Tassoh Island, it was considered necessary to apply the Headman Ordinance to the following towns on the island :—Tassoh, Aku Town and Samblama.

4. Cases of Yellow Fever having been reported from Kunso, about $2\frac{1}{2}$ hours from Makene in the Bombali Sub-district, it was thought that the place might possibly be an endemic focus for Yellow Fever, and it was decided that a Sanitary Inspector be appointed who should have his headquarters at Makene and who should travel round all the villages within a day's march of it, his duties to consist chiefly in discovering and destroying mosquito breeding places, teaching the people the dangers of mosquito breeding, and instructing them in methods of prevention.

5. By Order-in-Council No. 20 of 1918, the distance from the nearest standpipe within which it was obligatory on owners in Freetown to have their wells closed was increased from 130 to 500 yards.

6. A certain amount of attention has been given to the villages around Freetown. The headmen and committees of these villages have certain sanitary obligations under the Headman Ordinance of 1906, and as they were unable in some cases to carry out their obligations, and it was important that these suburbs should be kept in a satisfactory condition, a certain amount of assistance was rendered to them by the Government.

7. The Vaccination Ordinance of 1918 makes provision (Section 3, Sub-section 2) for the Governor to appoint during his pleasure to be Public Vaccinators duly qualified medical practitioners not in the Government Service, and such other persons as may be certified by the Senior Sanitary Officer or other Medical Officer deputed by him for that purpose to have the necessary skill and knowledge. Under Section (6) the Senior Sanitary Officer may make regulations with respect to (1) the supply of lymph, (2) the method of vaccination by Public Vaccinators, (3) the treatment of persons after vaccination, (4) the evidence to be accepted of successful vaccination, (5) the times and places of attendance of persons upon public vaccinators for the purpose of vaccination.

Under Section 10, "Any public vaccinator may examine and vaccinate any person arriving in Sierra Leone by land or sea who cannot produce satisfactory evidence of successful vaccination or of having suffered from small-pox." Under Section 11, "Any employer of labour immigrant from

other countries shall notify the Senior Sanitary Officer at least three days before the arrival of such labourers for the purpose of their inspection, and if necessary, vaccination."

8. The scheme for appointing Sanitary Inspectors for the Protectorate is still under consideration.

II.—PREVENTIVE MEASURES AGAINST (a) INSECT-BORNE DISEASE.

MALARIA.

9. During the year under review, anti-mosquito measures on a much more extensive scale than hitherto have been carried out in Freetown. As there was reason to believe that the crews of certain ships calling at Sierra Leone had been infected with malaria and had conveyed the disease to England, it was considered necessary to adopt more effective anti-malarial measures at this port, and £20,000 was set aside for the purpose.

10. In organising an anti-malarial campaign here the Sanitary Authorities have been extremely fortunate in having at their disposal the reports of certain of the pioneers on anti-mosquito work, who have at one time or other visited Sierra Leone. The "Report of the Malarial Expedition of the Liverpool School of Tropical Medicine and Medical Parasitology" (Ross, Annett and Austin), in procuring a copy of which we were fortunate, has been found of the greatest value. Much use was made of Ross's booklet, "Mosquito Brigades and how to Organise Them," and a number of copies were ordered from England for distribution amongst the Sanitary Inspectors. Useful information was also acquired from the anonymous contributions to the "British Medical Journal" numbers of September 30th, 1899, and of October 14th, 1899, on the "Malarial Expedition to Sierra Leone."

11. The bionomics of the different species of anopheles found here have been so thoroughly worked out that, apart from definitely locating the breeding places, very little preliminary work has had to be undertaken.

12. The two known malarial carrying mosquitoes in Freetown are *Anopheles* ("Myzomyeia") *Funestus* (Giles) and *Anopheles* ("Pyretophorus") *Costalis* (Loew). The latter is by far the most common. The former is occasionally found in the outskirts of the town. *Myzomyeia Funesta* was found by Ross, Annett and Austin in 1900 to carry Quartan and mild Tertian Fevers, and by Daniells to carry Malignant Tertian. It breeds in clear water, especially if the water is being continually renewed, as from a spring. Daniells states it cannot breed in stagnant pools, and observations here have shown that it only breeds where water is kept clear and fresh. *Pyretophorus Costalis* is the most prevalent malarial bearing mosquito. It was incriminated by Ross, Annett and Austin to carry all the forms of malaria. It breeds especially if there is water-weed in sluggish streams and stagnant water, and the larvæ have been very frequently found in the faulty drains and puddles which are such a common sight in and about Freetown.

13. As a result of constant inspection for the last few years, the majority of the *Anopheles* breeding places have been located. A record with spot map has been prepared of all breeding places discovered. This record is available for consultation by the Sanitary Inspectors. It is from time to time amended according as to whether a fresh breeding place has been discovered or one already on the list has been permanently dealt with. Each Sub-Inspector is provided with a copy, which he must keep up to date. Altogether 182 breeding places have been located.

14. Freetown for sanitary purposes has up to this year been divided into fourteen sanitary districts, each in charge of a Native Sanitary Inspector. With the increase in the staff in connection with the anti-malarial campaign which was commenced on the 1st of July of the current year, it has been possible to have twenty-four sections or subdivisions, each under a Sub-Inspector, making for greater efficiency in inspection and supervision. The special staff engaged to assist in anti-malarial measures comprises 12 Sub-Inspectors and several headmen. The number of headmen has varied according to the amount of work to be done; there were 28 in November, but the number in December was reduced to 22.

On the 30th of December three European Non-Commissioned Officers arrived from England to assist in anti-malarial work.

At the commencement of the campaign a certain amount of difficulty was experienced in obtaining the necessary labour required, and this became more emphasised during the influenza epidemic, but in the latter part of the year the number of labourers applying for work increased, and as many as could be efficiently supervised were enrolled. During the month of November about 380 labourers, in addition to the ordinary sanitary gang, were employed in anti-mosquito work.

15. Attached to each sanitary section there is an anti-malarial gang or mosquito brigade, whose activities are entirely directed towards mosquito extermination, special attention being given to anti-malarial work. The work of the gang consists of :—

- (a) General inspection for mosquito breeding grounds and dealing with them.
- (b) Keeping drains, channels, and streams open and free from weeds, grass, etc.
- (c) Cutting channels from pools.
- (d) Keeping pools, etc., clear from water-weeds if they cannot be treated by more permanent methods.
- (e) Sweeping stagnant pools.
- (f) Filling up large pools with stones, earth, etc.
- (g) Draining and filling water-logged compounds.
- (h) Regulation of streams.
- (i) Systematic collection and removal of tins and bottles.
- (j) Cutting and clearing undergrowth.

The destruction of smaller pools and puddles is simple and of great material benefit, as in those anopheles larvæ have been very frequently found. The advice given by Ross, "Attack first those collections of water the obliteration of which will remove the largest amount of mosquitoes for the least possible money" has been borne in mind.

It is recognised that the presence of fresh water algæ plays an important part in the development of mosquito larvæ, and special attention has been given to keeping pools of water, drains, etc., clear.

Much valuable assistance and advice has been given by Mr. O. G. Price, Acting Sanitary Engineer, in minor anti-malarial work, as in the grading of channels and regulation of streams, etc., as a certain amount of technical knowledge not possessed by the sanitary staff was required. During the year the following anti-malarial work was done by the mosquito brigades :—

Number of pools drained	...	...	...	4,296
Number of pools filled up	...	...	...	5,079
Number of pools cleared	...	...	...	8,835
Length of gutters cleared (in feet)	...	...	...	55,565

A special gang of one headman and 20 to 30 labourers was employed in regulating and clearing the various streams in the municipal area.

16. Closely associated with the anti-mosquito gangs, but quite distinct from them, is the oiling gang. This gang consists of four intelligent and reliable headmen, each assisted by a labourer, employed in oiling pools, wells and cesspits, etc. Each headman is provided with a list of natural breeding places (including cesspits and wells) of mosquitoes for this particular area of the town in which he is detailed for duty. Myer's knapsack sprays are found most serviceable for oiling work. The oiling mixture is composed of two parts of kerosene and one part of Sanitas solido fluid, which provides a mixture both useful and economical. A little of the oiling mixture is also issued daily to the Sub-Inspector of each sanitary section, so that he may be able to deal with any natural breeding places he may discover. One Sub-Inspector, assisted by a labourer, is engaged in inspecting and oiling boats and canoes. 11,061 drains and pools and 3,087 boats and canoes were oiled during the year. About 600 cesspits and over 200 wells were oiled regularly.

17. Cavities in trees are a fertile source of mosquitoes, including anopheles. Four men, each assisted by two labourers, have been engaged in inspecting trees and chipping, oiling or filling up with cement, holes in which mosquitoes can breed. 1,108 breeding places were discovered, of which about two per cent. were anopheles. 16,490 holes were dealt with.

18. Arrangements were made for the dumping of stone to enable householders to fill up depressions in their compounds. This was first recommended as an anti-malarial measure by Professor Simpson, and is of very great benefit.

19. Instructions were received from the Secretary of State that the closing of wells was to be undertaken as part of the anti-malarial campaign. In the course of examinations made in 1913 and 1916 certain wells were found to breed mosquitoes, and it was arranged that those in which mosquito larvæ had been found should be dealt with first. During the year 125 wells were closed by the Government, and at the public expense, and 20 were voluntarily closed by the owners.

20. To make an anti-malarial campaign in Freetown the success it should be, a certain amount of permanent drainage work is necessary for those areas which cannot be efficiently dealt with by temporary methods. Unfortunately, it has not been possible to carry out any drainage work under the anti-malarial scheme this year, but it is expected that a commencement will be made early in 1919.

YELLOW FEVER.

21. One case of Yellow Fever (Native—fatal) occurred in Dan Street, Freetown, in August. The diagnosis was confirmed at the autopsy.

Another case (European—fatal) was reported from Tower Hill Hospital in August. The patient was stationed at Signal Hill, just outside Freetown, and was removed for treatment to Tower Hill. The usual precautions of fumigation and other anti-mosquito measures were taken in regard to these two cases, and no more were discovered.

In view of the occurrence of the case at Signal Hill, special anti-mosquito measures have been taken in respect of the villages in the neighbourhood of Freetown.

22. A case of Yellow Fever (European—fatal) was reported on the 4th of January from the Kunso American Mission Station near Makene, in the Bombali Sub-district, which from past records appears to have been an area where new arrivals contracted an acute and very fatal disease, and in which one case of Yellow Fever and another suspected case (both fatal) occurred

in 1917. Rigid anti-mosquito measures were carried out, and no more cases have been reported. As was stated before, a Sanitary Inspector was appointed to patrol this area, to carry out anti-mosquito work and to advise and instruct the natives in regard to the dangers of mosquito breeding.

FILARIASIS.

23. A certain amount of Filarial infection is present in the Colony and Protectorate, and with the great increase in the anti-mosquito measures taken, a reduction of this disease, in Freetown at any rate, is to be hoped for.

TRYPANOSOMIASIS.

24. One case of sleeping sickness (fatal—native) was reported from the Colonial Hospital. The patient was by profession a seaman, but his previous history could not be ascertained.

25. A great reduction in the numbers of tsetse flies is to be observed at the Lighthouse Peninsula as a result of the extensive clearing of undergrowth there.

(b) INFECTIOUS AND EPIDEMIC DISEASES.

CEREBRO-SPINAL MENINGITIS.

26. No case of Cerebro-Spinal Meningitis was reported during the year.

DYSENTERY.

27. Large numbers of cases of dysentery, chiefly of the amœbic type, continue to be reported in Freetown. There is reason to expect that, with the closing of the wells and the continuous application of oil and disinfectant to a large proportion of the cesspits, the incidence of this disease will be reduced.

PLAGUE.

28. 5,880 rats were caught by rat-catchers during the year. The routine bacteriological examination of rats was carried out by the Medical Officer in charge of the Laboratory, but no evidence of plague was discovered. The number of rats caught by the inhabitants and presented at the Sanitary Office for payment continues very small, chiefly on account of the difficulty of procuring traps. Only 107 rats were presented for payment during the year.

29. Consignments of Ratin and Ratinin were received from England and were set from time to time at different parts of the town.

SMALL-POX.

30. No outbreak of small-pox of any consequence was reported during the year. A few small outbreaks from different parts of the Protectorate were reported, but prophylactic measures were applied and none of them assumed serious proportions. During the year 294 cases were reported from the Protectorate and 20 from the Colony.

31. The number of vaccinations performed in 1918 is not so high as the previous year. The chief cause was the Influenza Epidemic. During the latter part of September, the whole of October and part of November vaccination was temporarily suspended in the Protectorate until conditions became more settled. Owing to the shortage in the Medical Staff it was

not possible to detail a Medical Officer for vaccination inspections, and this may also possibly account to some extent for the decrease in the figures :—

The following vaccinations were performed :—

		1916.	1917.	1918.
Total number vaccinated	...	87,705	105,988	63,700
„ successful	...	71,744	68,783	32,033

INFLUENZA.

32. During the months of September, October, and part of November, an epidemic of influenza (so called) of a very acute, infectious and virulent nature visited Sierra Leone. An interim report on the epidemic in Freetown has already been submitted.

33. There seems to be little doubt that the disease was introduced into the Colony by ships arriving at this port from Europe, where it had been prevalent for some time before breaking out here. No official intimation was received that such an outbreak existed in any of the ports of Europe, but the condition was so infectious, the number of unrecognisable cases so many, and quarantine in a port where it was of the utmost importance that the large number of ships calling should be coaled, watered, and if necessary victualled with the least possible delay, so impracticable, that even although a warning had been received it is extremely doubtful whether it would have been possible to prevent the disease getting ashore.

No country and no city which have lain in the natural path of influenza in its pandemic form has succeeded in avoiding its incidence, and in the present state of our knowledge there is no prospect of doing so except by the imposition of restrictions of such severity that no community could be expected to tolerate them. In the United States Navy quarantine and isolation have been found to be impracticable on account of the wide distribution of the organism in healthy persons and the number of unrecognisable cases (U.S. Public Health Bulletin, September 13th, 1918). As time wore on the port became bombarded with influenza from infected ships from all parts of the world.

34. When the disease was definitely recognised in Freetown, arrangements were made to warn other West African Dependencies of the conditions existing here and to advise them of the precautions to be taken as regards ships arriving with the disease. Bills of Health of ships leaving the port were endorsed to the effect that influenza was prevalent.

35. The epidemic first began to assume serious proportions in Freetown about the end of August, and in a very short time practically the whole trade of the town and port was at a standstill. At first deaths were not numerous, but as time wore on complications in the form of severe heart and lung affections, which were very fatal, made their appearance, affecting alike Europeans and Natives.

36. The measures taken to limit the spread of infection in Freetown are contained in a special interim report on the subject. Schools were closed very early on the outbreak and kept closed until the middle of October. The collection of individuals in buildings was discouraged, and many services of public worship were held in the open air.

The outstations were warned of the conditions obtaining in Freetown, and instructions were issued as to the precautions to be observed and curative and preventive measures to be taken.

The prophylactic measures advised were carried out as energetically as possible both in Freetown and the Protectorate, and it is hoped that they were of some value, but it is interesting to note as showing the controversy raging about this disease that certain medical men (*e.g.*, the medical members

of the board of health of Christiania) hold that no public health measures can prevent the spread of influenza. (British Medical Journal, December 21st, 1918). It is certainly the case that the application of preventive measures is fraught with great practical difficulties. The extremely short incubation period of the disease, its infectivity in its early stages before it can be recognised, the frequency of mild, unrecognised but nevertheless infectious cases and the difficulties of diagnosis all contrive to render such measures almost impracticable.

37. Reports from the Protectorate show that the epidemic broke out there shortly after it made itself manifest in Freetown. A few cases occurred in Moyamba (about five hours journey by train from Freetown) about the beginning of September. A few cases were reported from Bo and Kennema, also on the railway on the 1st of September. The first case was noted at Batkanu on the 5th September, and cases were reported from Kaballa on the 10th. The latter town is five days march from the railway. Bonthe Sherbro seems to have infected about the 7th of September.

38. Certain of the District Commissioners, on being informed of the conditions obtaining in Freetown, attempted to carry out Quarantine Restrictions in their districts, but no district seems to have escaped the infection, and no quarantine measures seem to have been efficacious. The District Commissioner, Makene, reported "The disease seems to be very infectious and the most efficient system of patrolling failed to keep the disease out of the barracks at Daru."

39. It will be realised that the investigation of an extensive infectious disease such as this amongst a people, a large number of whom are slow to seek the services of a medical officer, presents many difficulties and affords ample scope for statistical fallacy. In no locality was it possible to obtain complete reports of cases, and therefore a true prevalence rate cannot be computed. An attempt was made in Freetown to ascertain to what extent certain groups of individuals were affected, but the data obtained was most unreliable and scanty. There is reason to believe that at least 70 per cent. of the population was affected in Freetown. In the Protectorate it would seem as if the proportion was at least as high as in Freetown. Every chiefdom was affected.

CASE MORTALITY.

40. This can hardly be determined with any approach to accuracy as the number of cases and the number of deaths are both conjectural figures. From data available it has been calculated that the case mortality all over was about 4 per cent.

III.—GENERAL MEASURES.

41. Clearing of bush and undergrowth, etc., was carried out wherever possible in order to expose hidden breeding places for mosquitoes. The clearing of the bush at the Cape Peninsula and the extension of the farming operations reported by Dr. Laurie last year has resulted in a very great reduction in the number of tsetse flies in this area where formerly they were quite numerous.

DISPOSAL OF REFUSE.

42. There is no change in the methods for refuse disposal. The present type of incinerators, although satisfactory in the dry weather, cannot deal with the refuse in the wet season. The rubbish which cannot be dealt with by the incinerators is used for filling up holes or dumped into the sea. It is not a very sanitary method of disposal and causes the foreshore at times to look

very unsightly (if not actually insanitary). As the streets become more satisfactory and the centralisation of refuse with improved transport becomes more apparent the question of more modern and up-to-date methods of refuse removal and disposal will have to be considered.

DRAINAGE.

43. Although surface drainage of Freetown generally remains in an unsatisfactory condition, a certain amount of useful drainage work has been carried out during the current year. An important anti-malarial measure has been the continuation of the drainage of the stream from Portuguese Town Spring almost to Alligator Brook. It is expected that this will be completed early in 1919. Concrete drains have been placed in Rock Street, Hagan Street and Priscilla Street. The drain in Priscilla Street was before its improvement one of the most fertile breeders of *Anopheles* in Freetown. It is expected that under the Steegman Scheme quite an appreciable amount of permanent anti-malarial drainage work will be done during 1919.

44. Sanitary Inspections were carried out in Freetown systematically. 98,294 inspections of premises were carried out during the year compared with 87,897 in 1917 and 72,204 in 1916. 7,809 notices were served to remove insanitary conditions in premises. Police Court proceedings were instituted in 195 cases for non-compliance, resulting in conviction in 186 cases.

376 prosecutions for mosquito larvæ found in houses and compounds have been undertaken during the year with 332 convictions: the average fine inflicted was about three shillings.

MEAT INSPECTIONS.

45. 6,258 bullocks, 528 sheep, 9 goats and 1 pig were killed during the year. 13 bullocks, 17 quarters and 41 lbs. have been condemned as unfit for human food, chiefly on account of infection with *Cysticerci bovis*.

SEWAGE DISPOSAL.

46. Cesspits in Freetown and the villages surrounding still continue to be the chief means of sewage disposal. They are very insanitary, but until a proper system of conservancy has been introduced they are a necessary evil. A large increase in the number of public latrines is required which may have some effect in reducing the number of cesspits.

WATER SUPPLY.

47. The total amount of water available in Freetown from the public water-supply is about 560,000 gallons per diem in a normal dry season. The total quantity of water consumed in 24 hours during the month of February was a little over 400,000 gallons.

The Superintendent of Waterworks reports that the Gathering Grounds are regularly patrolled and several trespassers found cutting wood and sticks therein were successfully prosecuted at the Police Court. The pumping unit at the Babadori Valley has been handed over to the City Council, and is in the charge of a European fitter, Mr. Gardiner. The supply from the George Brook has been cut off for some time from the town as it is liable to pollution.

B.—MEASURES TAKEN TO SPREAD KNOWLEDGE OF HYGIENE AND SANITATION.

48. Elementary lectures in sanitation were given to the Sanitary Inspectors by the Medical Officer of Health. Hygiene and sanitation continue to be taught in the schools of the Colony.

C.—RECOMMENDATIONS FOR FUTURE WORK.

49. A number of recommendations for future work have been made in previous reports, of which the most important are the following :—

- (1) Introduction of a satisfactory drainage scheme for Freetown.
- (2) The introduction of simple building rules for Freetown.
- (3) Improvement of type of Incinerators.
- (4) Provision of Inspectors for Protectorate and Colony outside Freetown and Bonthe.

30th April, 1919.

W. ALLAN,
Acting Senior Sanitary Officer.

SUMMARY OF ROUTINE SANITARY WORK DONE DURING THE YEAR IN THE TOWN.

1. Name of Town : Freetown.

—	Approximate area.	Number of proclaimed open spaces.
... ..	2 $\frac{3}{4}$ sq. miles.	2 Public Recreation Grounds.

2. Population.

—	No. of Natives.		No. of Europeans.		Total.
	Males.	Females.	Males.	Females.	
1911 Census	33,363 and 169 Asiatics.		558		34,090

3. Housing.

—	Number occupied by Europeans.	Number occupied by Natives.
Number of Houses :—		
1916	112*	5,608
1917	120*	5,678
1918	120*	5,758

Including
all non-
Europeans.

Number of Huts :—

1916	} Included among Native Houses.
1917	
1918	

4. Mosquito Protection of Houses.

—	1916.	1917.	1918.
Number of European houses wholly mosquito-protected			
Number of European houses with mosquito room			
Number rendered during the year wholly mosquito-protected			
Number rendered during the year partially mosquito-protected			

One mosquito-protected room at
Colonial Nursing Home and one
at Colonial Hospital.

5. Erection of New Buildings during the Year.

—	1916.	1917.	1918.
Number of public buildings erected with sanction as to site, construction, and relation to other buildings.	—	—	—
Number of houses erected with sanction as to site, construction, and relation to other buildings.	284	238	184
Number of huts erected with sanction as to site, construction, and relation to other buildings.	—	—	—
Number of houses built without sanction	—	—	12
Number of huts built without sanction	—	—	—

*Excluding Hill Station and Cline Town Reservation and Barraeks.

Action taken :—

—	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.

6. Markets.

—	Total Number.	Number paved and drained.	Number unpaved.
1916	10	8	2
1917	10	8	2
1918	10	8	2

7. Slaughter-houses.

—	Total number.	Total paved and drained.	Number unpaved.
1916	2	2	—
1917	2	2	—
1918	2	2	—

8. Latrines.

—	For Males.*		For Females.*	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1916	9	47	9	24
1917	11	71	11	48
1918	11	71	11	48
Number of New Public Latrines erected during year :—				
1916	1	12	1	12
1917	2	24	2	24
1918	—	—	—	—
Number of Public Latrines repaired during year :—				
1916	6	—	6	—
1917	6	—	6	—
1918	4	—	4	—
Number of Public Latrines demolished during year :—				
1916	1	4	1	4
1917	—	—	—	—
1918	—	—	—	—

* In only 4 instances are latrines for males and females differentiated.

—	1916.	1917.	1918.
Number of Private Latrines	229	241	250
Average number of pails of nightsoil removed daily	271	298	307
Average number of soiled pails removed and clean pails substituted ...	—	—	307
Number of nightsoil men employed to clean latrines and remove excreta ...	—	—	} Prisoners employed
Number of cesspools	4,140	4,123	
Number of cesspools cleansed	796	1,057	1,013
Number of new cesspools constructed or repaired during the year	85	96	498
Number of old cesspools abolished	80	88	89
Number of cesspools oiled regularly by Department	657	612	669

9. Removal of refuse.

	1916.	1917.	1918.
Number of dust-bins	73	73	72
Number of carts (if employed) at work, etc. ...	5	5	7
Amount of refuse removed daily from streets ...	35 tons.	35 tons.	35 tons.
Number of carts (if employed) at work daily, etc. ...	—	—	7
Amount of refuse removed daily, etc. ...	—	—	35 tons.
Number of men employed for removing refuse (average) ...	175	175	175*

*Including men specially employed in removing tins, bottles, etc.

10. Mode of disposal of excreta, refuse and offal.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of slaughter-house and market offal.		
	1916.	1917.	1918.	1916.	1917.	1918.	1916.	1917.	1918.
Burial or trenched									
Burnt									
Thrown into Sea									
*Otherwise dealt with									

* State mode of disposal.

11. Average daily number of canoe-loads of tin cans, bottles, broken crockery and other incombustible material removed from houses, huts and compounds and taken out to sea.

1916.	1917.	1918.
10	12	12

12. Water Supply.

Nature of Water Supply.	1916.	1917.	1918.
Pipe-borne water :—	Upland	Surface	Reservations.
Source (river, lake or spring) :—			
Number of linear yards	—	—	—
Number of stand pipes along roads	—	—	193
Number of stand pipes in compounds and houses	—	—	257
Wells :—			
Public :—			
Number	1	1	1
Number with pumps protected against surface water and mosquito-protected	—	—	—
Private :—			
Number	745	731	581
Number protected against surface water and mosquito-protected	61	61	50

12. Water Supply—continued.

Nature of Water Supply.	1916.	1917.	1918.
Tanks :—			
Public :—			
Number underground	—	—	1
Number mosquito-protected and served by pumps ...	—	—	1
Number above ground	—	—	4
Number mosquito-protected	—	—	—
Number of 400 gallons capacity or less	—	—	—
Number above 400 gallons	—	—	5
Private :—			
Number underground	—	—	—
Number mosquito-protected	—	—	—
Number above ground	25	23	17
Number mosquito-protected	8	8	8
Number of 400 gallons capacity or less	—	—	—
Number above 400 gallons	—	—	—
Nature of tanks :—			
Wood	—	—	—
Iron	12	11	16
Concrete	13	12	9
Barrels :—			
Number	—	—	868
Number mosquito-protected	—	—	131

13. Drainage.

Nature of Drainage.	Public.	Private.
Masonry Drains :		
Lineal yards of masonry drains :—		
1916	—	—
1917	200 yds.	—
1918	—	—
Lineal yards reconstructed during the year :—		
1916	230 yds.	—
1917	—	—
1918	—	—
Lineal yards repaired during the year :—		
1916	500 yds.	—
1917	—	—
1918	—	—
Lineal yards of new drains constructed during the year :—		
1916	—	—
1917	—	—
1918	—	—
Earth drains or ditches :—	600 yds.	
Number of linear yards of ditches cleaned :—		
1916	—	—
1917	—	—
1918	1,600 yds.	—
Number of linear yards of ditches dug and graded :—		
1916	—	—
1917	—	—
1918	55,565 yds.	—
Average frequency of clearing ditches of grass :—		
1916	—	—
1917	—	—
1918	Twice annually.	—

14. Clearance of undergrowth, long grass and jungle.

—	1916.	1917.	1918.
Number of square yards of weeds, grass, and vegetation cut and removed	—	—	—
Average frequency of clearance of rank vegetation on same area	Cleared	twice annually	

15. Excavations and low-lying land.

—	1916.	1917.	1918.
Number of pools and excavations	—	—	—
Number of excavations filled up	—	—	5,069
Amount of low-lying and marsh land raised and drained	—	—	—
Number of pools, marshes, streams, etc., fish-stocked	—	—	—
Number of cubic yards of material used for filling up pools and excavations	—	—	—
Number of persons fined for making new excavations	—	—	—
Average number of men daily employed in filling up pools, etc. ...	—	—	—

16. Oiling.

—	1916.	1917.	1918.
*Number of drains oiled	15,040	46,225	110,181
Number of pools and excavations oiled			
Number of tanks and barrels oiled	—	—	—
Average number of men daily employed for oiling drains, pools, water-tanks or barrels	5†	5†	10

* i.e. Number of times oiling was performed.

† These men might also be employed in other duties.

17. Inspections and Prosecutions.

—	1916.	1917.	1918.
Number of inspectors employed	19	19	29
Number of houses inspected	72,204	87,897	98,294*
Number of houses where larvæ were found	361	529	402
Number of notices served to remove conditions causing the breeding of larvæ	20	—	539
Number of persons fined for having mosquito larvæ on premises ...	305	388	332
Number of notices served to remove insanitary conditions on premises	4,960	5,825	7,809
Number of persons fined for not removing insanitary conditions after notice	132	38	186
Number of soda and aerated water factories inspected	—	—	—

* The same house may, of course, have been inspected several times in the course of the year.

† Insanitary conditions excluding those causing the breeding of larvæ.

